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ABSTRACT

This final report/doctoral dissertation describes activities and accomplishments of Project LIFT (Looking at Intervention Factors with Teachers), which assessed the relationships among classroom intervention acceptability, integrity, and effectiveness. Two studies were conducted. The first involved observing interventions implemented in 10 Iowa elementary classroom settings. In the second study, 350 elementary teachers in 11 states were surveyed with a project-developed questionnaire concerning their experiences and perceptions of interventions they have implemented with students. Findings from both studies indicated that teachers tended to receive assistance when developing an intervention, but then implemented the intervention alone. Individualized intervention plans rarely described specific steps to be completed. Most teachers rated the interventions from moderate to very acceptable in both studies and implementation integrity was found to be high in the observation study. Teachers responding to the survey indicated more use of formal efforts to maintain intervention integrity than teachers in the observation study actually used. Appended are interview forms used in the observational study, the questionnaire used in the national survey, and factor analysis results. (DB)

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# The Relationship of Intervention Acceptability and Integrity in General Classroom Interventions: Project LIFT (Looking at Intervention Factors with Teachers). Final Report.

Gayle Joanne Luze

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# The relationship of intervention acceptability and integrity in general classroom interventions

by

Gayle Joanne Luze

A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHISOSOPHY

Major: Human Development and Family Studies (Early Childhood Special Education)

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Summary for Project LIFT (Looking at Intervention Factors with Teachers)

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Increasing emphasis is being placed on providing educational interventions for children with learning and behavioral problems in the least restrictive environment (LRE). Several of the factors suggested as important in intervention implementation include intervention acceptability, integrity, and effectiveness. Most school-based intervention plans do not include assessment of these factors. Little research has been completed to examine interventions in applied settings to determine if the hypothesized relationship between the components exists.

The overall purpose of this project was to assess the relationships between intervention acceptability, intervention integrity, and the effectiveness of classroom interventions using two studies. The first study involved observing interventions as they were implemented in elementary classroom settings. The second study used a survey to ask elementary teachers in 11 states about their experiences and perceptions of interventions they have implemented for students.

Findings from both studies indicated that teachers tended to receive assistance when developing the interventions, but then implemented the interventions alone. In general, individualized interventions plans did not describe specific steps to be completed as part of the intervention. Most teachers rated the interventions from moderate to very acceptable in both studies. Implementation integrity was found to be high in the observation study. Teachers in the survey indicated more use of formal efforts to maintain intervention integrity than did teachers in the observation study. Further findings and implications are also discussed in the attached dissertation.

Iowa State University

This is to certify that the Doctoral dissertation of

Gayle Joanne Luze

has met the dissertation requirements of Iowa State University

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## ABSTRACT

Increasing emphasis is being placed on providing educational interventions for children with learning and behavioral problems in the least restrictive environment (LRE). This results in greater pressure on teachers, who often have had little or no specialized training in classroom management and individualized educational needs (Peterson & Casey, 1991). Efforts to assist teachers working with students having difficulty usually involve teachers using a problem-solving process to develop individualized interventions. However, little applied research has been conducted to confirm the critical factors important in developing and implementing interventions to achieve positive student outcomes in school settings.

Several of the factors suggested to be critical in intervention implementation include intervention acceptability, integrity, and effectiveness. Most school-based intervention plans do not include assessment of these factors. Both intervention acceptability and integrity are hypothesized to influence intervention implementation and effectiveness. Little research has been completed to examine interventions in applied settings to determine if the hypothesized relationships between these intervention factors exists.

The overall purpose of this project was to assess the relationships between intervention acceptability, intervention integrity, and the effectiveness of classroom interventions using two studies. The first study involved observing interventions as they were implemented in elementary classroom settings. The second study used a survey to ask

elementary teachers in 11 states about their experiences with and perceptions about interventions they have implemented for students.

Findings from both studies indicated that teachers tended to receive assistance in developing the interventions, but then implemented the interventions alone. In general, plans developed for the interventions did not describe the specific steps to be completed as part of the interventions. Most teachers in both studies rated the interventions they implemented from moderate to very acceptable. Implementation integrity was also found to be high in the observation study. Teachers responding to the survey indicated more use of formal efforts to maintain intervention integrity than teachers in the observation study actually used. Further findings and implications are also discussed.

# GENERAL INTRODUCTION

## Introduction

Increasing emphasis is being placed on providing educational interventions for children with learning and behavioral problems in the least restrictive environment (LRE). This results in greater pressure on teachers, who have often had little or no specialized training in classroom management and individualized educational needs (Peterson & Casey, 1991). Efforts to assist teachers working with students having difficulty in school usually involve teachers working within a problem-solving process to develop individualized interventions. However, little applied research has been conducted to confirm the critical factors important in developing and implementing interventions to achieve positive student outcomes in school settings.

Several factors have been identified as critical in intervention implementation. These include intervention acceptability and implementation integrity (Witt & Elliott, 1985; Shapiro, 1987). Intervention acceptability refers to judgments made by potential consumers about the fairness, appropriateness, and intrusiveness of the intervention (Kazdin, 1980a; Witt & Elliott, 1985). No matter how appropriate or effective an intervention may be, if the people expected to implement an intervention do not view it as acceptable, the likelihood they will do so is drastically reduced.

Intervention integrity is defined as the degree to which an intervention is implemented as designed (Gresham, 1989). When intervention integrity is not assessed, no reliable determination can be made as to whether the intervention was responsible for student change (Tilly & Flugum, 1995). However, most actual intervention plans do not include

assessment of intervention integrity during or after implementation. In fact, most intervention research includes no assessment of implementation integrity (Gresham, Gansle, & Noell, 1993; Gresham, Gansle, Noell, Cohen, & Rosenblum, 1993; Peterson, Homer & Wonderlich, 1982).

Both intervention acceptability and integrity are hypothesized to influence intervention implementation and effectiveness. Effective interventions are more likely to lead to better student outcomes. Resulting student outcomes are compared to goals or expectations set for them by school personnel and parents. While this link has been discussed in the literature, little research has been done to examine interventions in applied settings in an effort to determine if the hypothesized relationships between the components exists (Watson, Sterling, & McDade, 1997).

The overall purpose of this project was to assess the relationships between intervention acceptability, intervention integrity, and the effectiveness of classroom interventions. To accomplish this goal, interventions developed for young elementary students experiencing learning and behavioral concerns implemented in general classroom settings were examined.

## Research Questions

This project was designed to examine factors that influence acceptability of interventions, integrity of intervention implementation, and effectiveness of interventions in school settings. The project included two studies, one a local study using interviews and observations of interventions, the other study was a questionnaire sent to teachers in a number of states. Specifically, the following questions were addressed by this project:

(1) What is the relationship between teacher ratings of intervention acceptability and intervention integrity?

(2) How well can teachers accurately measure intervention integrity as part of the intervention implementation process?

(3) What is the relationship between intervention integrity and student outcome?.

(4) What factors influence intervention implementation in general education classrooms?

(5) How are intervention acceptability and intervention integrity measured and evaluated in actual classroom practice?

To answer question one, data were collected using interviews and scale questionnaires to complete correlational analyses from both studies. Correlational data were gathered to answer question two using intervention checklists developed as part of the observation study. Question three involved gathering descriptive and correlational data through interviews and observations as part of the observation study. Descriptive analyses of interview and questionnaire data from both studies were utilized to answer questions four and five.

It was hypothesized that higher levels of acceptability will be related to higher levels of intervention integrity (question 1). It was further hypothesized that higher levels of intervention integrity will be related to more positive student outcomes (question 3). No hypotheses were developed for questions 2, 4, and 5, as these are more exploratory questions.

## Dissertation Organization

In an effort to address the prepared research questions, two related projects were undertaken. The first project was a local observation study designed to examine actual interventions as they were implemented in school settings. The second project was a national survey study that examined issues identified in the local study to determine if they influenced interventions in similar ways across different geographic areas. As a result, the dissertation will be divided into several sections. The following subsection will contain a literature review applicable to both projects, as both projects are examining the same issues. Each project will be discussed in separate sections, followed by a general conclusion section discussing the relationships between the information gained from each project.

# LITERATURE REVIEW

## Introduction

Reauthorization of the Individuals with Disabilities Education Act (IDEA) and other policy initiatives are part of the impetus for increasing attention being focused on the needs of children with special needs in public schools. IDEA requires children receive a free and appropriate education (FAPE) in the least restrictive environment (LRE). The least restrictive environment is one in which services are provided in a setting as similar as possible to the educational environment of children without disabilities. Services in the least restrictive environment are more than just good policy; children have been found to learn both academic and social skills better in typical classroom environments (Graden, Zins, Curtis, & Cobb, 1988; Peterson & Casey, 1991). In addition to more students receiving special education in general education settings, more students who struggle with the general curriculum and who are considered at-risk for school failure are receiving individualized assistance in their general classrooms (Graden, Casey, & Christenson, 1985; Graden, et al., 1988).

Teachers in general classrooms often have had little or no training in classroom management or in dealing with children who experience problems in school (Bear, 1990; Berliner, 1988). As a result, teachers are often less willing to engage in interventions to help the student remain in the general class setting (Peterson & Casey, 1991). However, teachers are frequently not given an option to refuse to modify curricula and implement specialized interventions. Legal requirements, as well as increasing parent insistence that their children be served in general classrooms, have placed greater emphasis on the need to assist teachers develop additional strategies to meet these students' needs in general class settings (Myles &

Simpson, 1992). In addition, pressure is being placed on schools to use resources as wisely as possible to achieve the greatest gain. As a result, interest in determining the most effective interventions to address student need is growing.

One method used to develop interventions designed to address students' individual needs is a problem-solving approach. Problem-solving is a structured method used to develop interventions designed to meet individual student needs. While a number of approaches can be used, those usually used in education include behavioral and collaborative problem-solving (Telzrow, 1995; Tilly & Flugum, 1995). In general, problem-solving approaches include describing the identified problem, generating and selecting possible solutions, testing the chosen alternative, and evaluating effectiveness of the intervention once it has been implemented (Deno, 1995).

Problem solving can occur with one person, but in educational settings, it more often includes two or more people. Those involved in the problem-solving process can be support personnel (e.g., school psychologists, special education teachers/consultants) or building-based teacher assistance teams. The resulting interventions can focus on students in need of additional compensatory or remedial assistance, as well as those requiring special education programming, and can occur in a general classroom or alternative setting.

In order to develop effective interventions using a problem solving approach, the student's skills must be assessed. Information gathered during this assessment will be used to determine the area(s) of need. This information can be used to generate and select possible interventions, as well as develop an appropriate method to measure progress. It is also important that the problem-solving process itself be evaluated to ensure reliable and valid

decisions are made (Macmann, et al., 1996). This information is necessary to develop the most effective method to address the problem (Deno, 1995).

Researchers have hypothesized the significance of various factors in determining the effectiveness of problem-solving and intervention implementation, including teacher acceptance of potential interventions, the integrity with which interventions are implemented, and intervention outcome (Elliott, 1988a; Gresham, 1989). However, little applied research has been carried out to confirm which critical factors apply in actual school settings. Further exploration of these variables is needed to understand their significance. The current examination begins with a look at the social validity of school-based interventions, as this topic subsumes other relevant variables.

## Social Validity

Social validity is a judgment regarding whether an intervention or program has validity in the eyes of the society in which it is implemented. It comprises an important part of determining the acceptability and social usefulness of any intervention. Wolf (1978) first formally defined social validity as having three components: (1) The social significance of the *goals* (Are these specific goals what society wants?), (2) The social appropriateness of the *procedures* (Do participants consider the treatment procedures to be acceptable?), and (3) The social importance of the *effects* (Are consumers satisfied with the effects of the intervention, including any unintended effects?). Social validity can be measured at a variety of levels, from an individual family or classroom, to a school, local community, state, nation, or multinational level. The particular level chosen will depend on the purpose of the intervention.

**Components of Social Validity**

Social significance of the goals includes determining the intervention target is necessary and appropriate, in general, as well as for this specific person. At times, goals of different consumers may conflict and the subsequent intervention needs to reconcile these differences. Another issue in the social validity of an intervention target is determining the standard to use for establishing the goal. This standard usually involves comparing the performance of the target individual to another individual who has been determined to be competent in the skill of interest (Van Houten, 1979). However, this may not always be the most appropriate standard because competency in a particular skill has not been well defined, or may have many definitions. At times, the usual standard may not be appropriate for this particular individual (the reading competency standard for a high school student with a significant cognitive impairment should not be the reading competency of a typical $10^{th}$ grade student).

Social appropriateness of the procedures used during the intervention process has received a great deal of study (Gresham & Lopez, 1996; Reimers, Wacker, Cooper, & DeRaad, 1992). Acceptability of intervention techniques has been studied for clinical needs, as well as for educational needs. A limitation of some of the research concerning intervention procedures is many times all consumers affected by the treatment/intervention have not included in evaluation of its acceptability. Direct consumers are often asked about the social acceptability of an intervention, but more indirect consumers are not (Finney, 1991). For example, often clinical treatment staff are asked about acceptability of a treatment, but patients, family members, and community members are not included in evaluation of acceptability.

**Measuring Social Validity**

Measurement of social validity also has been used to determine if the outcome of an intervention makes a clinically important change in the client's life. Judgments concerning intervention effects need to go beyond statistical significance to practical and significant change in a person's life. Baer, Wolf, and Risley (1968, 1987) emphasize the importance of examining effectiveness as part of any evaluation of social validity. Some interventions include procedures designed to meet an important goal, and judged to be acceptable, but are not effective in meeting this goal. As a result, these interventions lack social validity in spite of the good intentions of planning and implementation agents.

One method of measuring the social validity of intervention effects is using a social comparison criteria to measure the social validity of planned goals (Kazdin, 1977). The criteria are set by comparing the target individual to a socially acceptable standard (standards are often not objectively defined in the community). The standard used for social comparison must be carefully chosen, and needs to be appropriate for the individual and the intervention. Baer, et al. (1987) also discussed use of a cost-benefit ratio analysis to measure effectiveness of an intervention. If the amount of behavior change does not equal the amount of effort (effort can be measured in many ways, including time, cost of materials, number of people, etc.), then the effectiveness of the intervention is in question. A cost-benefit analysis can be used to help select interventions that are most effective and efficient for all concerned.

Social validity data are often gathered by asking consumers their opinions about an intervention. Consumers who evaluate interventions include direct consumers (primary recipients of the intervention; e.g., child with a reading behavior problem and his/her teacher), indirect consumers (individuals strongly affected by the intervention; e.g., parent of

the child, or the school who hired the interventionists), and the extended community (those who live in the same community as the direct consumers; e.g., store clerk who waits on the child, people who use the same community center as the child; Schwartz & Baer, 1991).

Including opinions of all consumers (direct, indirect, and extended) is important in determining an intervention's social validity, but this is often not done. If a plan is effective, but looks "odd" when implemented in the extended community, the plan may be compromised. As a result, interventionists or direct and indirect consumers may be less willing to implement the intervention again. Consideration of social validity also keeps intervention planners focused on planning changes appropriate for the broader context in which people live and work. An intervention acceptable to direct consumers, that is effective and implemented with integrity is much more likely to be considered socially valid than one that does not meet these criteria.

In general, research concerning social validity has examined social acceptability of intervention procedures. Examination of social significance of goals and effects has received less attention (Gresham & Lopez, 1996). In addition, most research has looked only at consumer satisfaction. While this is an important component, it may provide incomplete information because it is an indirect, subjective measure. Consumer satisfaction is also dependent on consumer knowledge of the concern, alternative intervention strategies, and expected outcomes (Schwartz, 1991). Consumer satisfaction also only provides the opinion of a person or persons added to that of the intervention developer (Hawkins, 1991). More objective measures, such as direct observation of implementation of the program or intervention, are suggested to complement indirect (self-report consumer satisfaction) measures (Hawkins, 1991; Storey & Horner, 1991). These more objective measures can also

be used to determine the cost-benefit ratio of the intervention to determine if the goals will be likely to increase benefits and decrease costs for individuals receiving interventions as well as the overall community (Hawkins, 1991). Examination of actual performance involves collecting data about implementation integrity and effectiveness.

Verification of social validity needs to be made for both broad programs and individual interventions to ensure appropriateness and effectiveness. The issue of social validity will continue to be an important part of program and intervention development as more accountability is required to meet financial and ethical standards of responsibility.

## Models of Intervention Factors

Measuring social validity of interventions is complex as it includes measurement of a number of components and their interrelated effects. Several useful models have been developed to clarify and organize understanding of an intervention's social validity. In an effort to fit theories about intervention implementation with existing empirical information, Witt and Elliott (1985) developed a working model of the major variables that influence treatment or intervention effectiveness. This model begins with intervention acceptability, which, in turn, affects intervention use, intervention integrity, and intervention effectiveness. The relationship between the elements of the model is sequential and reciprocal (Elliott, 1988a). These authors hypothesize a break between any of the elements will affect each remaining element.

Intervention use refers to actual intervention implementation. Intervention integrity is how closely the intervention implemented reflects the original intervention plan. Effectiveness of intervention refers to whether the intervention changed the behavior of

concern as was intended and desired. Effectiveness of the intervention, then also influences acceptability of the current intervention and future possible interventions because effective interventions are viewed as more acceptable.

Reimers, Wacker, and Koeppl (1987) expanded the Witt and Elliott model to include several additional factors mentioned in the research literature. This model places understanding the intervention (the teacher's understanding of what the intervention includes and how to implement it) as the first variable. It is logical that a treatment is less likely to be seen as acceptable if the teacher does not understand what is to be done.

Reimers, et al. (1987) hypothesized that poor understanding leads to low compliance with the intervention, which in turn, results in low effectiveness. On the other hand, if the interventionist has a good understanding of the intervention, then assessment can be made of his/her acceptability of the intervention. After acceptability is determined, compliance and intervention maintenance is measured. Where Witt and Elliott (1985) include treatment integrity in their model, Reimers, et al. (1987) instead include compliance (trying the intervention once) and maintenance (continuing use). Assessment is made of the intervention's disruption to a family's routine, as this may influence maintenance of the intervention. An evaluation of the intervention, and possible modification of the intervention, are included in the model.

Both models described here offer strengths and weaknesses when used to examine factors influencing intervention implementation. The reciprocal nature of the Witt and Elliott (1985) model emphasizes the interactive nature of the elements affecting intervention implementation and effectiveness. However, the Reimers, et al. (1987) model includes the important aspects of measuring consumer understanding, and determining which factors

influence use and maintenance of an intervention. Both models can help guide investigation of the influence of treatment acceptability on integrity and student outcomes, and have been used by a number of researchers to do so. The remainder of this paper will examine issues related to intervention acceptability, integrity, and effectiveness primarily using the model proposed by Witt and Elliott (1985), but will include elements from the Reimers, et al. (1987) model also.

## Intervention Acceptability

An important social validity aspect of any intervention plan is the acceptability of the intervention from the perspective of those involved. Intervention acceptability refers to the judgment by intervention participants or other lay persons that it is fair and appropriate (Witt & Elliott, 1985; Miltenberger, 1990). Teachers who do not judge a proposed intervention to be acceptable (workable with their curriculum, in their classroom, with their teaching style, etc.) are less likely to implement the intervention or to implement it as designed. Obviously, if an intervention is not implemented, it cannot be effective. In addition, it appears logical that incomplete implementation would also limit effectiveness.

Assessment of the acceptability of interventions proposed in the problem-solving process must be made during problem identification and analysis, as well as during intervention implementation (Reimers, et al., 1987). Without information about intervention acceptability, the problem-solving process, and the resulting intervention are considered to be at higher risk of failure. However, to date, there is not enough empirical evidence to make a definitive determination regarding this hypothesis.

A large body of literature based primarily on analog studies has examined a number of factors that influence ratings of intervention acceptability. Analog studies have usually involved providing a written description of a problem to a group of individuals (most often college students or practicing teachers) who are then asked to evaluate the acceptability of proposed interventions. Only a few studies have gone beyond the analog method; as a result, it is difficult to determine the actual influence of the factors described in applied settings.

Across the studies, a number of factors have been found to be influential in determining acceptability of interventions. These include severity of the presenting problem, teacher variables, theoretical perspective of the intervention along with type of intervention procedures used, and intervention effectiveness. Research studies examining each of these factors will be discussed.

**Problem Severity**

In the majority of analog studies, researchers have described severity of a presenting problem as a within-child variable (Elliott 1988b), not including teacher or environmental variables. In most cases, researchers have found as the severity of the problem increases, a greater range of proposed interventions are viewed as acceptable by teachers.

In a series of experiments, Kazdin (1980a, 1980b) studied the acceptability of several treatment approaches for children with a range of behavior problems. Results indicated more positive interventions (reinforcement) were rated as more acceptable than reductive or aversive treatments (e.g., time out, drug therapy, and shock). All treatments were rated more favorably for more serious behavior problems, but the order of acceptability did not change (positive treatments continued to have higher ratings). The findings of these studies have

been upheld by a number of other researchers (e.g., Martens, Witt, Elliott, & Darveaux, 1985; Reimers, et al., 1987; Witt, Elliott, & Martens, 1984; Witt, Martens, & Elliott, 1984).

In contrast to most research, Elliott, Turco, and Gresham (1987) found problem severity did not influence acceptability ratings by teachers, school psychologists, and students for group contingencies designed to address behavior problems. In general, all three groups of respondents evaluated individual contingencies as more acceptable than group contingencies (groups were to receive free time when two students with problems following classroom rules performed acceptable behavior). In a study of acceptability and collaboratively planned instruction, Kutskick, Gutkin, and Witt (1991) also found problem severity did not influence the acceptability of the various interventions.

Elliott, Witt, Galvin, and Peterson (1984) found an interaction between problem severity and intervention complexity when examining their influence on acceptability. Teachers were asked to rate the acceptability of positive and reductive interventions for behavior problems. Positive procedures were rated as more acceptable for all levels of severity. However, these ratings interacted with those for complexity; less complex interventions that required less time to implement were generally viewed as more acceptable, unless the problem was rated as severe. Teachers may view severe problems as requiring more complex interventions because the problems are also more complex.

In addition to severity, other student characteristics have also been found to influence intervention acceptability. Reported levels of student intelligence influenced teacher ratings of acceptability in a study by Martens and Meller (1989). Both a home-based reinforcement strategy and a school-based response cost strategy were perceived as more acceptable for students with average intelligence (vs. below average). The authors hypothesized the teachers

may have believed children with below average intelligence would have more difficulty understanding the intervention procedures.

**Teacher Variables**

An interesting finding of several research studies was that more experienced teachers rated all potential interventions as less acceptable than did less experienced teachers (Elliott, 1988a). Hypotheses for this finding include type of training the experienced teachers had received (assuming changes in training over the years), or changes in expectations about what teachers should do (Elliott, 1988a). Perhaps these teachers have had experience with ineffective interventions and thus, are more critical of all proposed interventions. On the other hand, teacher knowledge of a particular intervention has been found to increase acceptability (Elliott, 1988b). It may be easier to make a decision about the acceptability of a particular intervention strategy if teachers know about other potential interventions, or know about the possibility of success with the proposed intervention.

Experienced teachers may also have higher standards and expectations for success. Fuchs, Fuchs, and Phillips (1994) examined differences between teachers with higher vs. lower standards for success with student achievement with teachers and students in actual school environments. The results showed teachers with high standards had students with higher rates of academic achievement. However, even though the teachers made accommodations to meet the students' needs, these teachers also reported not wanting students with disabilities in their classes. These teachers may feel students who learn more slowly will keep them from moving the class to the high achievement goals they had set.

This finding causes concern that teachers with skills necessary to provide quality assistance to students with significant educational needs are also those least likely to agree to do so.

Epstein, Matson, Repp, and Helsel (1986) studied the effects of teacher status and student disability level on intervention acceptability. The authors asked general and special educators to evaluate the acceptability of several intervention strategies for children with mental retardation or learning disabilities. Results indicated no significant differences in acceptability based on either teacher status or student disability level.

Whinnery, Fuchs, and Fuchs (1991) found different results when comparing special and general education teachers' acceptance of interventions for students with mild disabilities who would be integrated in general education classrooms. Special education teachers reported a greater willingness to assist students with disabilities in the general education classrooms than did the general education teachers. However, general education teachers did report some willingness to try to assist students. When given a list of potential strategies that could be used to help students, the general education teachers were generally willing to use the strategies, even though they also reported not understanding what they would need to do to implement most of the strategies. Thus, general classroom teachers were willing to help the students in some way, even if they did not understand the specific steps involved. The reason their acceptability ratings for teaching students with disabilities were lower than that of the special education teachers may be due to a lower level of understanding of the needed instructional strategies than a rejection of working with students who have special needs.

Understanding how to implement an intervention may explain the different outcomes obtained in these studies. Polloway, Bursuck, Jayanthi, Epstein, and Nelson (1996) reported results of several teacher surveys regarding the acceptability of various adaptations for

students using procedures familiar to teachers. They examined teacher willingness to make changes in homework, testing, and grading procedures for students with disabilities, and found teachers generally willing to make individualized changes to meet student needs in all three areas. These results illustrate that it may be important to look beyond teacher status, number of years experience, and student need. More specific information may need to be gathered about teacher experiences with different interventions to help shape understanding of teachers' acceptability ratings of interventions.

Other teacher related variables, such as teacher perception of effectiveness, skills, time, and resources needed to implement interventions influence acceptability. Witt and Martens (1983) found the most important factor in determining acceptability of a specific intervention identified by respondents (teachers) was their perception of whether the intervention would help the child. Other, more secondary factors, were identified that included possible risk to the child, amount of teacher time, and teacher skill necessary to implement the intervention. Skill may influence teacher understanding of the intervention, amount of time required to plan and carry out the intervention, the number of additional resources needed for implementation, and belief in their abilities to instruct students. Teachers who believe they can have an effect on student learning are more willing to try and persist in working with children (Gibson & Dembo, 1984).

Schneider, Kerridge, and Katz (1992) found teachers rate positive intervention procedures that teach new skills as more acceptable than reductive procedures that involve reacting after the problem behavior has occurred. These authors also found interventions that did not require classroom changes (e.g., family therapy, social problem solving) were rated by classroom teachers as more favorable. This finding may be related to another factor --

time required for interventions. Teachers tend to rate interventions that require more staff time to plan and implement as less acceptable (Witt, Elliott, & Martens, 1984; Witt, Martens, & Elliott, 1984). Teachers also prefer interventions that do not require additional cost or material resources to implement (Witt, 1986).

**Theoretical Perspective and Procedures**

Teachers rate interventions described in more practical terms as more acceptable than those described in theoretical terms (Witt, 1986). This finding may be related to teacher's understanding of the intervention; interventions described in simple straightforward language may be easier to understand than those described in theoretical jargon. However, it may also be related to the fact that teachers can have misconceptions about certain theoretical perspectives (e.g., behavioral perspective) upon which interventions are based, and teachers tend to avoid interventions described using terminology of these perspectives (Kehle, Jenson, & Clark, 1992).

Cavell, Frentz and Kelley (1986) studied teacher reactions to different perspectives by giving teachers case descriptions of students with behavior problems along with proposed treatments that were either paradoxical (counterintuitive) or nonparadoxical. Teachers rated the paradoxical interventions as less acceptable than even unsuccessful conventional interventions. When given an explanation of why the paradoxical intervention was used, acceptance ratings improved, but still fell into the unacceptable range.

In another study examining how explanations about the theory behind interventions can influence acceptability ratings, Singh and Katz (1985) found instruction about the interventions' theory and procedures (three behavioral interventions) improved their

acceptability compared to a control intervention (humanistic parenting). Undergraduate college students were asked to rate the four interventions, then were provided instruction about the behavioral interventions, then were asked to rate the interventions again. The behavioral interventions increased in acceptability, but the humanistic parenting control intervention declined in acceptability.

Findings from a study by Kutsick, et al. (1991) expand on these results. In an analog study, in which the intervention planning process involved only a teacher, only a school psychologist, or both working together, all proposed interventions were viewed as more acceptable when the planning was a collaboration between both professionals. As a group, these studies point to the need for participants in the problem-solving process to ensure teachers clearly understand the proposed interventions to give them enough knowledge to make a determination about acceptability. Everyone involved will need to use similar jargon-free terminology and work collaboratively throughout the problem-solving process to make sure all participants understand the theoretical perspective used in the intervention.

**Effectiveness**

Kazdin (1984) hypothesized that intervention participants may view stronger procedures more positively because they believe these procedures are more likely to help achieve the established goal. In a research study examining the acceptability of several treatments, interventions with stronger procedures were rated as more acceptable by both children receiving services for behavior problems and their parents (Kazdin, 1981). In another study examining acceptability and effectiveness, teachers who rated an intervention as less acceptable also saw the intervention as less effective (Von Brock & Elliott, 1987). An

interaction was also found between severity of the problem and perceived intervention effectiveness; if the problem was only mild in severity, the acceptability was higher than for more severe problems. The researchers in this study hypothesized the reason for this finding was that teachers were more willing to experiment with interventions for more mild problems, but not for the more severe problems. It is interesting to note that this finding differs from those of Kazdin (1980a, 1980b) who examined severity of problems and acceptability of interventions. Differences in these findings may be related to different respondents used in the studies (Kazdin's early studies used college students, and several other studies used employed teachers). Another possible reason for the conflicting research results may be differences between specific problem behavior described in the studies.

Examination of the influence of treatment effectiveness and negative side effects was described by Kazdin (1981). He found the described effectiveness of treatments did not influence acceptability ratings. However, the presence of negative side effects reduced acceptability, with stronger negative effects reducing acceptability more significantly. However, this change did not have any effect on the rank ordering of the acceptability of the interventions; positive interventions continued to receive higher acceptability ratings than did other intervention types.

In contrast to Kazdin's (1981) findings, other studies have found effectiveness of treatments does affect acceptability (Witt & Elliott, 1985; Whinnery, et al., 1991). Reimers and Wacker (1988) conducted a study with parents of children treated in a clinic for behavior problems. They found initial ratings of acceptability of a treatment had less impact on later ratings of acceptability (after several months of intervention) than did intervention effectiveness. This finding was expanded with the study by Reimers, et al., (1992). These

authors found acceptability and intervention effectiveness were positively related to continued use of the intervention by parent report three and six months after beginning implementation. One strength of these two studies is that parents responded to actual interventions, rather than to analog case descriptions. Another strength is that measurement of acceptability was made both before and after implementation of the interventions.

**Summary**

A significant limitation of the intervention acceptability research is the reliance on analog studies (especially those that use college students rather than practitioners). Another limitation is the lack of research on more academically oriented interventions. Most research has focused on acceptability of interventions designed to address behavioral concerns. However, many interventions involve learning and/or academic concerns, and it is not known if the same or different factors influence acceptability of these types of interventions.

As these studies illustrate, intervention acceptability is influenced by a number of factors including time, positive vs. negative procedures, side effects, effectiveness, and teacher experience. Lennox and Miltenberger (1990) organized a number of these factors in a hierarchy of order for consideration – efficacy considerations (motivation, effectiveness), secondary effects (side effects, abuse potential), legal and social implications (precedence, social acceptability, intervention restrictiveness/intrusiveness), and practical considerations (staff competence and cooperation, efficiency, and cost effectiveness).

## Intervention Integrity

Intervention acceptability is hypothesized to influence intervention integrity. According to this logic, interventions rated as more acceptable are more likely to be implemented as designed than those rated unacceptable. As illustrated by Witt and Elliott's (1985) model, the integrity with which an intervention is implemented is considered to be a very important factor in bringing about student change. Integrity is related to both intervention acceptability and effectiveness. Effective interventions are hypothesized to be those implemented with greater integrity, and as a result those that produce more socially valid results.

### Importance of Integrity

Salend (1983, 1984) described lack of intervention integrity as a potential threat to the internal validity of behavioral interventions. The relationship between behavior change and intervention implementation cannot be established without information regarding implementation integrity (Gresham, 1996, March). Knowledge about internal validity and integrity is also needed to compare the effectiveness of different interventions to determine the most appropriate and effective intervention for each case (Moncher & Prinz, 1991). Internal validity is important for the individual intervention, as well as for determination of external validity.

External validity is also an important consideration in intervention integrity, as this form of validity will influence evaluation and replication of interventions in natural settings (Moncher & Prinz, 1991). Interventions may be effective in one setting and not in another, but without information about implementation integrity this information may be lost. Another

factor important in external validity is generalizability of the intervention from original training settings to other pertinent settings (Moncher & Prinz, 1991). An intervention may be seen as successful when a student who was previously unable to read starts to read material when working one-on-one with a teacher with a reading text, but the intervention is not truly successful until that student can read other materials independently (science book, magazines at home, etc.). Factors of internal and external validity are also important in determining the social validity of interventions (Wolf, 1978).

Integrity is viewed as important in both program and individual intervention implementation. Carta and Greenwood (1989) describe a number of factors that influence integrity and illustrate the need for measuring integrity. These factors include (1) lack of clarity in describing the intervention, possibly resulting in various interpretations of how to implement; (2) implementation difficulty in terms of number of people, time, effort or materials needed; (3) lack of incentives for staff to implement the intervention or program as designed, and (4) lack of staff skills to implement procedures successfully.

**Measuring Integrity**

The importance of measuring treatment integrity for both practical and ethical reasons was emphasized by Shapiro (1987). It is difficult to determine the effect of a specific intervention in research and practice if no measurement is made of how the intervention was implemented (any number of outside factors may influence behavior change, and measurement of integrity can help control for, or explain, some of the factors). Lack of integrity information can result in incorrect implementation of interventions, which may lead to a lack of progress, and time and resources are in too short supply to waste. Shapiro (1987)

also points out that it is ethically unsound to attempt to change people's behavior without accurately describing components of the intervention, as well as their effects on persons involved.

Several authors have emphasized the importance of measuring intervention integrity in intervention planning and evaluation (Gresham, 1989; Telzrow, 1995; Tilly & Flugum, 1995). Yet, little effort has been directed toward examining intervention integrity in either research settings or during field-based intervention implementation efforts (Gresham, 1989; Gresham Gansle, & Noell, 1993). It is difficult to stay on course without some sort of compass that can be used to check the charted route.

Peterson, et al. (1982) reviewed a number of empirical studies published between 1968 and 1980 and found only 16% of the studies discussed measuring intervention integrity. An update and expansion of the Peterson, et al. (1982) study examined studies from 1980 to 1990, and reported only 16% of intervention studies conducted in school settings provided information about intervention integrity (Gresham, Gansle, Noell, Cohen, & Rosenblum, 1993). However, those studies that did measure integrity reported a positive relationship between high levels of implementation and intervention effectiveness. It can only be assumed the number of intervention evaluations that include assessment of integrity in non-research, applied settings is almost nonexistent.

Valuable information to direct future research on intervention integrity is provided by Gresham (1989), who outlined a number of factors potentially related to intervention integrity. These include (1) complexity of interventions, (2) time required to implement interventions, (3) materials and resources required, (4) number of intervention agents, (5) perceived and actual effectiveness of the intervention, and (6) motivation of intervention

agents. It should be noted that these factors are also related to intervention acceptability. While each of these factors may be important, there is not currently enough empirical data to determine each factor's relative influence.

Gresham (1989) also provides guidance for further research by highlighting a number of technical issues involved in measuring intervention integrity. These issues include specification of all intervention components, degree of deviation from the treatment protocols and amount of behavior change, and psychometric issues involved in assessment of integrity (accuracy, reliability, and validity of measures). Measurement of integrity can be made via direct or indirect methods.

Direct methods include observation of the intervention by a non-participant observer, while indirect methods can include self-monitoring and self-report, rating scales, or checklists (Gresham, 1989, Tilly & Flugum, 1995). Indirect methods may have the potential to be cost effective measures that can be used on a continual basis with interventions in applied settings, but not enough research currently exits to make a determination of their accuracy in measuring integrity. Gresham (1996, March) outlines a simple and efficient method useful for both direct and indirect assessment. This system involves outlining the specific steps in an intervention, arranging the steps in a checklist, and using the checklist to monitor integrity.

While the knowledge and technology exist to begin examining intervention integrity, few have attempted to integrate assessment of integrity into research or practice. Those who have attempted to assess integrity provide evidence that implementation integrity has a positive influence of intervention results (Gresham, Gansle, Noell, Cohen, & Rosenblum, 1993; Peterson & McConnell, 1996; Shear & Shapiro, 1993). However, these studies all used

direct observation to measure integrity, which may be too costly to use as a part of routine practice.

One recent study used a more cost efficient method to assess integrity. The ongoing progress monitoring data collected to measure child progress was used as a reflection of integrity. If all the steps in the progress monitoring system were implemented, it was assumed all steps in the intervention plan were implemented (Allinder, 1996). This study illustrates cost effective methods for assessing intervention integrity may be available, and need to be investigated to determine if data gathered for progress monitoring accurately reflect intervention integrity.

Another recent study examined the relationship between implementation integrity and feedback given to teachers about implementation (Noell, Witt, Gilbertson, Ranier, & Freeland, 1997). This study examined how teachers implemented intervention programs designed as part of a consultation process. Teachers received either consultation to help plan the intervention or consultation during intervention planning along with feedback about their performance during implementation to ensure integrity. Teachers who received performance feedback maintained integrity of the intervention at higher levels than those who received only consultation. This study also used a less expensive method of gathering integrity data by collecting permanent products of the intervention (e.g., grade on assignment, reinforcer given is recorded; Noell, et al., 1997). In an examination of several studies, Witt, et al. (1997, May) also noted teachers initially implemented interventions with integrity, but did not continue with high levels of integrity unless they received some sort of prompting or feedback. These conditions were necessary for the entire length of the intervention; integrity dropped if prompting or feedback were discontinued.

In addition to providing feedback about the interventionists' performance, other suggestions to improve intervention integrity include use of intervention manuals and training of interventionists, consultation, and direct supervision of interventionists (Gottfredson, 1993; Greenwood, Terry, Arreaga-Mayer, & Finney, 1992; Moncher & Prinz, 1991). Improving intervention integrity is emphasized because it is hypothesized to be necessary for an intervention to be effective.

**Intervention Effectiveness**

As mentioned previously, intervention effectiveness is closely tied to both acceptability and integrity. An effective outcome is the goal of all intervention activities. The importance of effectiveness in the intervention implementation process can be seen in the emphasis on this component in the models developed by Witt and Elliott (1985) and Reimers, et al. (1987). Yeaton and Seachrest (1981) also describe effectiveness as one of the central components of interventions along with intervention strength and integrity.

A critical issue in measuring intervention effectiveness is first defining what makes a particular intervention effective (Yeaton & Seachrest, 1981). In each intervention, the participants must determine how they will know the intervention is effective for this student. It may initially appear to be an easy process to simply define the goal for the student to achieve, but this can become very complicated. Questions arise that do not have simple answers. Should the student's success be compared to other students in the class/school? Should a more individualized measure of success be used? Should an intervention be defined as effective even if the student did not reach the established goal, but has significantly

improved skills in the target area? Or, should the intervention be described as effective only if all participants agree the problem has been ameliorated?

An important part of intervention effectiveness is the measurement system used for evaluation. Measurement of student progress is also an important component of the problem solving process. Data gathered through regular and frequent progress monitoring increases the likelihood of intervention effectiveness and student improvement (Lentz, Allen, & Ehrhardt, 1996; Shinn, Gleason, & Tindal, 1989). When data about specific student progress are gathered frequently, intervention changes can be made if students are not making adequate progress toward the goal. Teachers and students do not have time to spend on ineffective interventions, so it is essential they be able to quickly determine what is working and what is not working.

Deno (1997) described three issues that should be addressed when establishing the validity of progress monitoring procedures, including looking at growth validity (measuring skills that reflect growth in the target area), instructional efficiency (determining what elements of instruction are included in the monitoring system), and instructional effectiveness (using the monitoring system to help the teacher improve instruction). These guidelines can be helpful in developing any progress monitoring system. In addition, it is vital that the progress monitoring data be used on a regular basis to evaluate student progress. Gathering data is not enough, it must actually be used to monitor and modify the intervention as needed.

## Conclusion

Teachers and schools are responding to the increasing demand for individualized assistance for students who are having difficulty in the general education curriculum (Graden, Casey, & Christenson, 1985; Graden, et al., 1988). However, the resources available to schools and teachers have not been increasing at the same rate as the needs. As a result, teachers and schools need to use their time and materials in the most efficient manner as possible. One way to maximize efficiency is to ensure that truly effective interventions are used. Effectiveness can be viewed as part of a larger picture of social validity, which also encompasses intervention acceptability and integrity of implementation.

There has been notable progress in examining the individual issues related to social validity. However, very little research that combines these issues in applied settings with actual intervention programs has been undertaken. This type of research is needed to further examine conflicting findings from previous research, as well as explore the relationship between the factors of intervention acceptability, implementation integrity and intervention effectiveness. These variables also need to be examined in natural settings with actual interventions. Most available research has used only analog studies to examine the issues. Schools, teachers, and parents need information that can be applied to their situations to help individual students in need.

# PART I. LOCAL OBSERVATION STUDY

## INTRODUCTION

The local observation study was undertaken to examine issues regarding intervention acceptability (from the teacher's viewpoint), implementation integrity, and intervention effectiveness. This study was conducted with teachers serving children whose skills and/or behaviors were significantly discrepant from expectations and who needed specialized individual assistance. Schools considered to be local to Iowa State University participated in having actual interventions observed.

These schools were chosen for reasons other than mere convenience; the Area Education Agency (AEA) serving these schools has instituted changes that influence intervention processes for local schools and teachers. Iowa is divided into 15 regions, each served by an intermediate education agency (AEA) that provides support to schools in staff development, media production, and special education support staff. The AEA serving the schools in the central Iowa area has made significant changes in the pre-referral intervention and assessment for special education eligibility processes, which influence how teachers work with children in general education classrooms (Ikeda, Tilly, Stumme, Volmer, & Allison, 1996). Schools engage in more formalized interventions (that are documented in writing) in general education classrooms, both for students who are experiencing difficulty with the typical school curriculum, and for those who might be considered for special education services. This makes these schools excellent choices for looking at factors that influence intervention implementation and effectiveness.

The local observation study was designed to examine factors that influence acceptability of interventions, integrity of intervention implementation, and effectiveness of interventions in school settings. Specifically, the following questions were addressed:

(1) What is the relationship between teacher ratings of intervention acceptability and intervention integrity?

(2) How well can teachers accurately measure intervention integrity as part of the intervention implementation process?

(3) What is the relationship between intervention integrity and student outcome?

To answer question one, data were collected using interviews and scale questionnaires to complete correlational analyses. Correlational data were gathered to answer question two using intervention checklists developed for this the study. Question three involved gathering descriptive and correlational data through interviews and observations.

It was hypothesized that higher levels of acceptability will be related to higher levels of intervention integrity (question one). It was further hypothesized that higher levels of intervention integrity will be related to more positive student outcomes (question three). No hypotheses were developed for questions two, which was an exploratory question.

# METHODOLOGY

## Participants

Project participants included 10 elementary school teachers from eight local school districts. Teachers were recruited for participation via information sent to elementary level (kindergarten through sixth grade) building principals in the central Iowa area. Principals were asked to share information with teachers using enclosed flyers, or another method of their choice. Several principals included information in a staff newsletter, mentioned the study during staff meetings, gave the flyers to individual teachers, or posted the informational flyers where teachers could easily see them. Principals were called, approximately four to five weeks after the initial mailing of information, to remind them of the study and to ask for further assistance in recruiting teachers.

Teachers who were working with students on an individualized intervention plans, and who were interested in participating, called the principal investigator. During this initial contact, the teacher was informed about the intervention components necessary for inclusion in the research study. Interventions needed to include the following components: (a) based on a written plan, (b) include direct instructional assistance (include more than only indirect assistance such as modifying curriculum, changing workload, contacts with parents, but include activities such as teaching a new skill in math, or using a reward system with the student that includes direct feedback), and (c) student progress on the skills addressed by the interventions be monitored on frequent basis.

After determining an intervention plan included all components in the research study's criteria, each teacher was sent consent forms for her own participation, as well as for

the students' participation. Even though it was the teacher's behaviors being studied, because these behaviors occurred in the context of working with an individual student, permission to allow observation of the student, as well as examination of written information collected about the student (written intervention plan and progress monitoring data), was sought from each student's parents. Included in the packet sent for teachers to pass on to parents was a cover letter, a description of the research study, and a consent form requesting parents allow their child to participate in the study. Parents were asked to return the signed consent form to the principal investigator at Iowa State University. Consent forms were returned to the principal investigator rather than the teacher for the sake of efficiency. This method of obtaining permission for student participation was used in an effort to protect student confidentiality until parents consented to participation. Teachers and parents received a copy of their consent forms after the principal investigator also signed the form.

Recruitment efforts resulted in 10 teachers who agreed to participate, and who were able to secure parental permission. All participating teachers were white females, with an average age of 38, and an average of 14 years of teaching experience. The participating teachers included seven general education classroom teachers in kindergarten through fourth grade. Three participating teachers worked as resource/at-risk teachers serving students receiving special education assistance (students who had IEP's) and/or students who are considered to be at-risk for school failure. The Iowa Department of Education had obtained a waiver from the U.S. Department of Education for local schools to serve students considered at-risk, for a limited amount of time, in resource programs. Three teachers in this study served target students in this manner. The number of students served in each classroom varied widely as a result of the different types of classrooms observed, with between 4 and

30 (M=20) students in each classroom. The number of students in each classroom who had an IEP varied between 0 and 16, with an average of 4. Students in each classroom who received special assistance via written individualized plan, but who were not identified to receive special education ranged from 0 to 16, with an average of 3. The large variability in the number of students in each classroom and students with IEP's and intervention plans can be explained by the different types of programs that teachers served. Several teachers served students in more than one type of program (e.g., Title I and ESL), and teachers described their students according to the types of programs in which they received services. All teachers worked in small school districts, seven of which were located in small towns and served primarily rural areas. One school district was adjacent to a large metropolitan area, but was not part of the urban district.

## Measures

Data were gathered for the study using four different measures; a description of each instrument and its purpose is found below. The first three measures (Teacher Intervention Interview, Intervention Checklist, Intervention Observation Form) were developed for use in this study; the fourth measure consisted of individual child progress monitoring data collected as part of the intervention (and developed independent of the research study). Intervention acceptability was measured using the Intervention Comparison Scale that was included as part of the Teacher Intervention Interview. Intervention integrity was measured using the Intervention Checklist, developed from information gathered during the initial Teacher Interview. Child outcome data were gathered from progress monitoring records collected by the teachers.

**Teacher Intervention Interview (TII)**

The Teacher Intervention Interview (TII) was developed to provide information about the teacher and her classroom, general experiences with and attitudes about interventions, the specific target intervention, and teacher perceptions regarding the acceptability of the interventions implemented. Information gathered as part of the interview was used to develop measures of intervention acceptability and integrity. Two forms of the TII, the Initial Interview and Closing Interview, were used to gather data. See Appendix A for a copy of both interview forms.

**TII - Initial Interview.**

The TII - Initial Interview was used when beginning the investigation with each teacher. This form is divided into four sections: (1) background (demographic) information, (2) general questions about interventions (teacher experiences, attitudes about interventions, school policies and local influences on interventions), (3) questions addressing the specific intervention under investigation, and (4) the Intervention Comparison Scale (ICS). The ICS is a 21 item measure of acceptability using likert response questions (a more detailed description is given below).

The third section of the TII - Initial Interview was the longest and most detailed section. It included questions about planning the intervention (the process and who was involved), materials needed, personnel involved in implementation, the actual steps involved in implementing the intervention, and how data about child progress were gathered. During the interview, a great deal of attention was given to describing the actual steps involved in implementing the intervention as this information was used in developing another measure – the Intervention Checklist (IC). Teachers were each asked to describe every step they

performed with the student as specifically as possible, with focus on what the teacher did and not necessarily on the student's responses or behaviors.

**TII - Closing Interview.**

The TII - Closing Interview was used after the intervention was completed to check with the teacher to see if any changes had occurred during the course of the intervention and to ask questions about student progress/outcomes. This form contained only three sections: (1) background questions, (2) specific intervention questions (questions about materials and personnel needed, support provided/needed, changes in intervention steps or student needs), and (3) a variation of the ICS that included 17 items. This scale differs slightly from the one used with the Initial Interview.

**Intervention Comparison Scale (ICS).**

As mentioned previously, the ICS was designed as a measure of overall acceptability and has two very similar versions, one for the Initial Interview (called Initial Intervention Comparison Scale -- IICS) and another for the Closing Interview (called the Closing Intervention Comparison Scale -- CICS). See Appendix B for copies of each form. Four questions pertaining to intervention planning appear on the IICS but are not included on the CICS. In addition, wording of questions was changed to the past tense in the CICS.

The ICS was based on several instruments used in analog studies to measure teacher acceptability ratings of behavioral interventions. Scales examined and used as an initial basis for the ICS included the Treatment Evaluation Inventory (TEI; Kazdin, 1980a), the Intervention Rating Profile (IRP; Witt and Elliott, 1985), and the Behavior Intervention Rating Scale (BIRS; VonBrock & Elliott, 1987). All these scales had been subjected to factor analysis and were found to be reliable measures of acceptability (Witt & Elliott, 1985).

None of the above scales was quite appropriate for use in this study as the questions addressed only behavioral interventions. For example, the BIRS included the question, "Most teachers would find this intervention appropriate for behavior problems in addition to the one described" (VonBrock & Elliott, 1987, p. 135). Items were selected from the scales that could be adapted to include a wider variety of interventions (i.e., academic and behavioral interventions), and interventions that were actually being implemented in a school setting. For example, one question on the ICS, "How acceptable do you find this intervention for this child's needs?" was very similar to questions on the TEI and IRP. Additional items were selected to address areas previous research suggested influence intervention acceptability, such as time needed for the intervention, severity of child need, and effectiveness of the intervention.

As mentioned earlier, the ICS form used in the initial interview differed slightly from the ICS used in the closing interview. Four items used to measure teacher involvement in planning the intervention, such as opportunity to choose from proposed interventions and her understanding of how to implement the intervention were included in the initial form, but not on the closing form. These questions were not included as planning activities occurred at the beginning of the intervention and were not applicable for the closing interview.

**Intervention Checklist (IC)**

The Intervention Checklist (IC) was used to measure the integrity of intervention implementation. The IC consisted of the specific steps teachers used with each child during the intervention, and was designed during the TII - Initial Interview (see above description of section three). The steps were developed to accurately reflect the intervention

implementation plan as well as what the teacher actually did with the student on a regular basis. Each step included in the IC was coded according to a likert scale: (1) did not do the step, (2) made some attempt to implement the step, (3) implemented the step, and (4) not applicable. The category "not applicable" was included because some steps were done only on certain days of the week or were dependent on a specific student response. For example, a teacher may have given a student a math drill sheet every Tuesday or may have only used a correction procedure when a student failed to follow stated directions.

Data for the IC were collected using two methods: self report by teachers and direct observation by research assistants. Teachers were asked to complete the IC at least three times per week if they implemented the intervention four or five days per week, and every time they implemented the intervention if this occurred one to three days per week. Observers collected IC data each time they observed an intervention; observations were scheduled one or two times per week. Teachers were asked to make sure they completed the IC on all days that the observers also collected data.

**Intervention Observation Form (IOF)**

The IOF was used by the research assistants to collect additional data about contextual variables surrounding the intervention. Data were gathered about the intervention setting (length of intervention, number of students and adults in the room, group size). In addition, information about the classroom environment (rules and procedures, transitions, interruptions), teacher behaviors (clarity of explanations, monitoring of the classroom, instructional feedback, waiting for students to respond), and target student participation (attending, following directions, actively participating) was gathered. Each of the last three

categories of data were gathered using a scale of not occurring, occurring sometimes, occurring frequently, and unclear if the behavior occurred. A copy of this form can be found in Appendix C.

**Child Outcome Data**

Child outcome data were obtained from the progress monitoring data collected by participating teachers or support personnel as part of the intervention plan. The purpose of this progress monitoring was to measure change in the students' skills addressed by the intervention. It is intended to be more specific than assessment of general progress in the classroom and/or curriculum, but not so specific that it measures only a skill that may be mastered in one or two training sessions.

The progress monitoring measures were developed as part of the intervention, and collected independently of participation in the research study. However, teachers were informed participation in the study included using a written progress monitoring component with the intervention. Teachers were asked to make copies of any information they collected as part of their progress monitoring activities (e.g., charts, anecdotal notes, progress monitoring data sent home to parents). Teachers provided photo copies, and descriptions of the data they collected at the closing interview.

## Training

The principal investigator and four research assistants collected data for the study. Three research assistants were graduate students, and one was a special education teacher; all had previous experience or were receiving training to work in elementary school settings.

Data collection training was designed and implemented by the principal investigator for all research assistants. Training for completing the Teacher Intervention Interview (TII) forms consisted of discussion of each question, definitions of specific terms, and description of interview procedures. Next, research assistants practiced interviews in role-play situations. Additional role-play practice was provided to train the research assistants to develop the IC's, which often required more detailed questioning of the teachers. Training for observations using the IC's and the IOF also consisted of discussion of descriptions and definitions of each category, along with practice in role-play situations, and videotaped intervention examples. The videotapes included role-play and some actual classroom examples. During training, observers obtained an interrater reliability agreement of 100% for the IC over three consecutive training sessions. Interrater agreement for the IOF ranged from 63% to 94% over three consecutive training sessions.

**Data Collection**

Data collection took place from March to June 1997. All teacher interviews were conducted in person by a research assistant or the principal investigator and were audiotaped. Teachers were allowed to complete the fourth section of the TII - Initial Interview Intervention Comparison Scale after the interview and return the form to the research team at the next meeting if they wished. At the time of the initial interview, a copy of the written intervention plan was also obtained.

Information for the IC was gathered from each TII - Initial Interview and then checked with the principal investigator for comprehensiveness and clarity. Each teacher then approved the description of the IC steps before the checklist was used. Observers provided

copies of the IC to each teacher, along with a set of directions describing how to complete the checklist. Each teacher was asked to gather information about the intervention according to the schedule specified in the previous section describing the IC.

Observers gathered both IC and IOF data during each observation. Observations were scheduled to begin immediately before the intervention was implemented and last until it was completed, if possible. Some interventions were ongoing throughout the day (e.g., behavioral interventions focused on following directions), so teachers were asked to schedule a time when the observer would be most likely to see the intervention implemented. Observers entered the classrooms as unobtrusively as possible so as not to interrupt ongoing activities. Students were aware of being observed; however, every effort was made not to single out the target student, and teachers usually informed the children that the observer was there to see how she worked with students.

After termination of the intervention, the TII - Closing Interview was conducted. Teachers could complete the Intervention Comparison Scale during the interview or on their own and mail it to the principal investigator. Photocopies of the Child Outcome Data (progress monitoring information including teacher notes and graphs) were also obtained from the teacher at this time.

# RESULTS

## Description of Interventions

Areas of need addressed by the interventions were academic for eight of the ten students. The academic areas covered included reading (3), prereading (letter and word identification for 2 kindergartners), writing (1), and math (2). The two behavioral interventions consisted of following directions and assignment completion. The majority of interventions were conducted by the child's general classroom teacher. Several teachers had some assistance from a volunteer, educational associate, and/or student teacher who conducted the intervention occasionally or worked with other students so the teacher was free to work with the target student. In three cases a special teacher conducted the intervention separately from the classroom teacher (classroom teachers were aware of the intervention being implemented and information was shared between the teachers, but they were not directly involved in the intervention).

Most interventions were implemented daily, one was implemented several times per week during a time when the academic topic area was covered, and one was implemented only when the student needed the assistance to meet behavioral demands of the setting. The grouping in which the target students received the intervention assistance included individual while separated from the group (five students, with one also receiving some assistance in the whole group setting), in small groups (three students), and during whole group work (three students, with one receiving some assistance individually). While the target student was receiving the intervention assistance, the other children in the class were usually working individually or in small groups on assigned work.

The majority of interventions had been implemented for a significant length of time before the teacher became involved in this study. Three had been initiated in the fall (August – November), three more began during the winter (December – February), and four others had been initiated in the spring (March – May). Only two interventions started immediately prior to participation in this research study.

In most of the interventions (seven), teachers developed the interventions with a Building Assistance Team (BAT; also known as Teacher Assistance Team). This group of teachers helps the referring teacher brainstorm possible interventions, keeps written documentation of the plan, and provides additional guidance if needed. The remaining three intervention plans were developed with the AEA support team (2), and a classroom teacher.

**Written Plan**

As mentioned previously, to be included in the study, interventions needed to be based on a written plan. The plans used by teachers varied widely in the clarity and completeness of information included. Several plans included only examples of what the students in the special group would work on, several other plans included notes about general procedures, one plan included a descriptive narrative and specific steps. Five of the intervention plans were written on forms used by the school's Building Assistance Team. Even the plans developed as part of a formal problem-solving process through the Building Assistance Teams varied in the specificity of description of the problem and procedures or steps to follow in assisting the student. An independent expert evaluator examined the written plans to give an objective evaluation of their clarity and quality (all personal information was deleted to maintain anonymity and confidentiality). The independent evaluator was an

advanced graduate student who had experience working with teachers and examining IEP's and intervention plans. The evaluator rated how well the students' goals could be determined from the written plans using a scale from one (not at all possible to determine) to six (very easy to determine). Student goals referred to the skills teachers and the intervention planning team wanted the student to achieve as a result of the intervention. The mean rating for the clarity of these written intervention plans was 3.50 (SD=3.00, range 1 – 6).

Research assistants who interviewed the teachers and developed the IC's were asked if it was possible to develop the intervention checklist directly from the written plan. The research assistants indicated that for one plan, it was possible to develop the IC directly from the plan, for another plan it was partially possible, and for the remaining eight it was not possible to develop the IC directly from the plan. This information further points out that the written plans contain mostly very general guidelines about what steps should be completed during the intervention.

## Intervention Acceptability

### Intervention Comparison Scale

Teachers completed the Initial Intervention Comparison Scale (IICS), a measure of intervention acceptability, during the initial interview. The scale contains 21 likert questions, with the scale range from 1 (low) to 6 (high). Five items were reverse coded, to maintain consistency of response format, before further analyses were completed (items recoded: 11, 12, 13, 15, 20; see Appendix B for copy of IICS). The first question on the IICS asked about the severity of the child's need and was not used as part of the overall acceptability rating,

but as a demographic item. The average rating of the severity of the child's need across the 10 teachers was five on a scale from one to six. Another item was eliminated from the scale because the response choices for this question did not have a linear increase from a smaller to a greater amount as did the other questions ("How would you rate the amount of materials and resources needed for the intervention? likert response format was 1=None, 3 to 4=Moderate amount, and 6=Excessive amount). Factor analysis of a related questionnaire used for a national survey also indicated a problem with this item (see Part II. National Survey Study).

The resulting initial acceptability scale was scored by summing the remaining 19 items, with a range of possible scores from 19 to 114. Scores were summed to obtain a broad range of acceptability scores. The mean acceptability rating was 95 (SD=9.13) for nine teachers (one teacher's data were not used because a number of items were omitted), with a range from 75 to 106. These scores were all above the median score on the scale (median=66.5). This would be an average rating of 5 on the likert scale used in the study, indicating a high level of acceptability for the interventions.

Acceptability was also measured at completion of the interventions, using the Closing Intervention Comparison Scale (CICS), to determine if changes had occurred in teacher opinions. The CICS included 17 items from the IICS with some slight wording changes (some verbs changed to past tense; see description in Measures section for more detail). The scale was prepared for analysis in the same way as the IICS.

Overall scores on the 15 items from the CICS were determined for nine teacher's scores (one form was not returned after the study). The possible range for this scale was 15 to 90 (median=52.5). Teacher total scores ranged from 69 to 88, with an mean rating of 82

(SD=7.91). A paired *t*-test comparing the two scales was completed to determine if teacher's ratings of acceptability had changed during the course of the interventions. In order to use the *t*-test, the scores had to be placed on the same scale; each teacher's total score was made into an average rating by dividing it by the number of items on each form. These average scores were used to complete the *t*-test (IICS mean=4.96, CICS mean=5.16). Even though closing ratings were slightly higher, there was not a statistically significant difference between teacher scores at the beginning and end of the intervention ($t$=-1.51, p=.17).

**Profile of IICS and CICS Responses**

To better examine acceptability ratings given to items, means and standard deviations of teacher responses to individual items from the original 21 IICS items and 17 CICS items (after recoding) are listed in Table 1. These responses are further illustrated in Figures 1 and 2.

Figure 1 contains data about the 21 IICS items, and Figure 2 contains the same data for the 17 CICS items (after recoding). On each graph, the center open box indicates the mean, and the top and bottom whiskers indicate a +1 and a -1 standard deviation. These figures also illustrate teachers rated most items above the item median (3.5) for acceptability. The figures illustrate Resources needed was rated the lowest of any item, but as mentioned previously, this item had some psychometric concerns, and was not included in the final acceptability scale.

While most responses were high (indicating more acceptability), teachers had a relatively wide range of responses for items concerning Choosing the plan from various options during planning on the IICS, and Child discomfort on the CICS. A wider range of responses were also noted for the following items on both the IICS and CICS: Practicality of

the intervention given amount of time needed for planning and for implementation, Lasting improvements made in the child's skills, Disruptiveness to the classroom, and Number of people needed to implement the intervention. Teacher ratings appear to be somewhat more variable on the CICS than on the IICS for Practicality of the intervention given time needed for planning and for implementation, and Child discomfort. This indicates that teachers varied more in their views of acceptability for these items at the close of the interventions than at the beginning.

A comparison of item means common to both the IICS and CICS was conducted to determine if significant changes had occurred in teacher opinions from beginning of the study to conclusion of the interventions. These data are presented in Table 2. As can be seen from the table, only two items showed a significant change from completion of the initial to the closing Intervention Comparison Scales. The item Importance of Need was significantly higher at the close of the intervention, indicating teachers were more likely to rate the intervention as targeting the student's most important need at the close of the study than at the beginning. In addition, Side Effects was also rated higher at the close than at the beginning of the study, indicating teachers believed there were fewer negative side effects of the intervention for the student than they had previously indicated.

## Intervention Integrity

### Intervention Checklist -- Teachers

The Intervention Checklist (IC), developed during the initial interview, served as a measure of intervention integrity. Each checklist was designed to be specific enough to

Table 1. Means and standard deviations for IICS and CICS items.

| IICS Item | M | SD | CICS Item | M | SD |
|---|---|---|---|---|---|
| 1. Severity of Need | 4.50 | .97 | 1. Severity of Need | 4.44 | .88 |
| 2. Suitability | 5.00 | .67 | 2. Suitability | 5.56 | .73 |
| 3. Importance of Need | 4.70 | .95 | 3. Importance of Need | 5.56 | .73 |
| 4. Planning Input | 5.60 | .70 | [a] | | |
| 5. Planning Involvement | 5.70 | .67 | [a] | | |
| 6. Understanding | 5.60 | .52 | 4. Understanding | 5.67 | .50 |
| 7. Choice of Plan | 4.90 | 1.45 | [a] | | |
| 8. Like Procedures | 5.33 | .71 | 5. Like Procedures | 5.33 | .71 |
| 9. Plan Ideas Used | 5.67 | .50 | [a] | | |
| 10. Acceptable | 5.40 | .70 | 6. Acceptable | 5.44 | .53 |
| 11. Time Involved [b] | 4.22 | .97 | 7. Time Involved [b] | 3.78 | 1.09 |
| 12. Resources Needed [b] | 3.56 | .72 | 8. Resources Needed [b] | 3.78 | .97 |
| 13. Side Effects [b] | 5.11 | .60 | 9. Side Effects [b] | 5.78 | .44 |
| 14. Effectiveness | 4.89 | .78 | 10. Effectiveness | 5.22 | .67 |
| 15. Child Discomfort [b] | 5.44 | 1.01 | 11. Child Discomfort [b] | 5.00 | 1.58 |
| 16. Permanent Improvement | 4.11 | 1.17 | 12. Permanent Improvement | 4.89 | 1.05 |
| 17. Practicality—Planning | 5.00 | 1.00 | 13. Practicality—Planning | 5.00 | 1.66 |
| 18. Practicality—Implementing | 4.78 | 1.39 | 14. Practicality—Implementing | 4.78 | 1.64 |
| 19. Record Keeping | 5.00 | 1.00 | 15. Record Keeping | 5.33 | .71 |
| 20. Disruptiveness [b] | 5.22 | 1.30 | 16. Disruptiveness [b] | 5.11 | 1.36 |
| 21. People Needed | 4.78 | 1.48 | 17. People Needed | 5.30 | 1.95 |

[a] Item not on CICS.

[b] Item reverse coded.

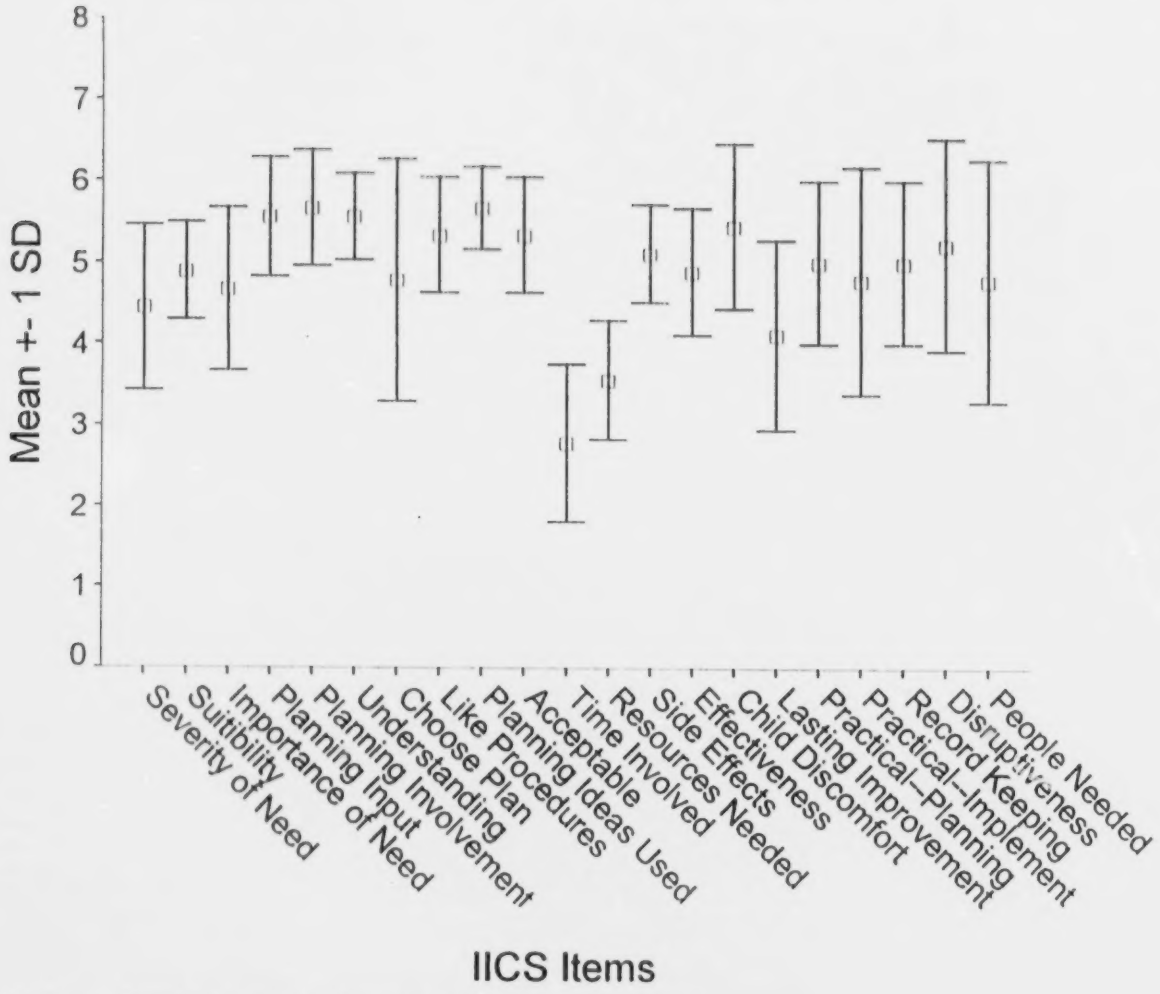


Figure 1. Graphed means and standard deviations of IICS items.

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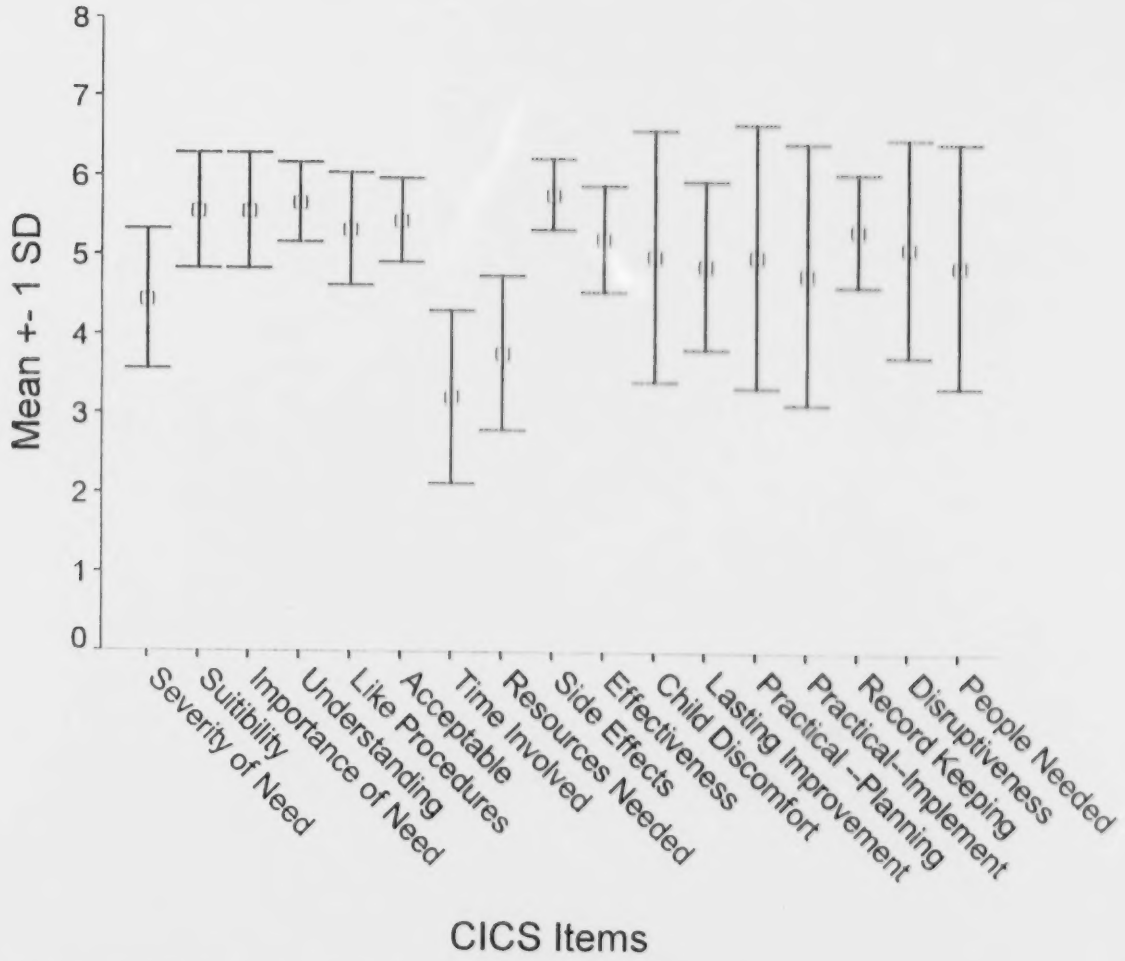


Figure 2. Graphed means and standard deviations of CICS items.





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Table 2. *t* test of IICS and CICS items.

| Items | Paired Differences M | SD | *t* |
|---|---|---|---|
| Severity of Need<br>IICS -1, CICS-1 | .00 | 1.00 | .00 |
| Suitability<br>IICS-2, CICS-2 | -.56 | .88 | -1.89 |
| Importance of Need<br>IICS-3, CICS-3 | -.89 | .93 | -2.87* |
| Understanding<br>IICS-6, CICS-4 | -.11 | .60 | -.56 |
| Like Procedures<br>IICS-8, CICS-5 | .00 | .76 | .00 |
| Acceptable<br>IICS-10, CICS-6 | .00 | .71 | .00 |
| Time Involved [a]<br>IICS-11, CICS-7 | .63 | 1.19 | 1.49 |
| Side Effects [a]<br>IICS-13, CICS-9 | -.63 | .74 | -2.38* |
| Effectiveness<br>IICS-14, CICS-10 | -.25 | 1.17 | -.61 |
| Child Discomfort [a]<br>IICS-15, CICS-11 | .75 | 1.75 | 1.21 |
| Permanent Improvement<br>IICS-16, CICS-12 | -.50 | 1.41 | -1.00 |
| Practicality—Planning<br>IICS-17, CICS-13 | -.13 | 1.36 | -.26 |
| Practicality—Implementing<br>IICS-18, CICS-14 | -.38 | .52 | -2.05 |
| Record Keeping<br>IICS-19, CICS-15 | -.50 | .76 | -1.87 |
| Disruptiveness [a]<br>IICS-20, CICS-16 | .25 | 1.17 | .61 |
| People Needed<br>IICS-21, CICS-17 | -.78 | 1.39 | -1.67 |

[a] Item reverse coded.

* $p < .05$.

measure intervention implementation accurately, but general enough to cover the various activities teachers used during the intervention. Figure 3 contains examples of Intervention Checklists used in the study. The prereading intervention was used with a kindergarten student with a target behavior of showing progress in difficult academic areas. The student for whom the behavioral intervention was used had a goal to increase motivation and level of independence in completing assignments.

Teachers completed the IC between zero and eight times (intervention implemented several times each day) per week (M=2.4). Several teachers completed the checklist on a less frequently than had been originally requested (see schedule description in Measures section).

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Prereading intervention

1. Identifies alphabet letters on flashcards.
2. Matches upper and lower case letters (using a variety of materials with letters).
3. Reinforcing knowledge of letters – teacher names letter and student produces letter (e.g., traces letter in sand, chooses a flashcard with correct letter, etc.).
4. Review letters with flashcards – identifying letters.

Behavioral Intervention

1. Teacher hands the student her work folder and tells her what work she is expected to do within the hour.
2. If the student does not set the timer at her desk, the teacher will prompt her to set the work timer.
3. When the student's timer goes off (every 5 min.) the teacher gives her feedback about the work and fills in the assignment monitoring chart.
4. Teacher goes over points earned for the morning with the student, and records points earned.

---

Figure 3. Examples of Intervention Checklists (IC's).

Among all teachers, across all data collection days, the self-report rate of implementation ranged from 0 to 100%. The overall average of completion of steps was 91% for all teachers in the study (the range of average completion for individual teachers was between 74% and 100%).

**Intervention Checklist -- Observers**

Observers completed the same Intervention Checklist used by the teachers during each observation session. Observations were made during 68 intervention sessions, and occurred between zero and three times per week (M=1.06). The percent of steps recorded as completed for each observation ranged between 25% and 100%, with an average of 85%. The overall percent of steps completed for the teachers (across all observations for each teacher) ranged from 62% to 100%.

**Interrater Agreement**

**Observers.**

Interrater reliability data were gathered between observers for 16 of the 68 observations (24% of total observations). Each observer (four total observers, with principal investigator and three research assistants) conducted reliability assessments with each other observer. Agreement was determined using a point-by-point agreement ratio (Kazdin, 1982) to gain as accurate an assessment as possible. Agreements were calculated by adding the number of agreements for each step listed, divided by the number of agreements plus disagreements, multiplied by 100. The overall level of interrater agreement was 89%, with a range from 40% to 100% (10 sessions had reliability estimates of 100%).

**Teachers and Observers.**

Agreement between teachers and observers was assessed for each observation session for which the teacher also completed the intervention checklist (n=42). The same point-by-point formula was used to determine interrater reliability between observers was utilized here. The overall level of agreement between teachers and observers was found to be 73% (range from 25% to 100%).

**Teacher Comments**

Teachers had also been asked about efforts made to ensure intervention integrity during the initial and closing interviews. Teachers indicated they did try to maintain integrity, but these efforts were mainly informal – talking with others about the plan and what is needed (two teachers) or thinking about what the student needs (three teachers), and reviewing lesson plans and other records (two teachers). One teacher used the checklist developed as part of the study to maintain integrity of implementation.

## Intervention Acceptability and Integrity

While the sample size in this study is too small to complete formal statistical analyses, some comparisons of the data can be made. Overall, both acceptability and implementation integrity were high. A comparison of the ranking of teachers according to their acceptability scores on the Intervention Comparison Scale and their overall levels of integrity as measured by self-report and observation, showed no noticeable patterns or consistencies (e.g., a teacher who rated the intervention as more acceptable also ranked high on integrity as measured by self report and observation). However, if only self-report

integrity and acceptability data are examined, the teachers who had three of the four highest acceptability scores on the ICS were among the four teachers with the highest integrity scores.

**Student Outcome and Integrity**

Progress monitoring data were collected from the teachers at the conclusion of each intervention. As with the written intervention plans, there was a great deal of variability in the types of data collected and their presentation. Only one teacher used graphs to keep student data, one teacher did not use frequent monitoring (the teacher who was to assist with this part of the intervention was absent due to health problems), the other teachers used various types of charts to keep the data (count of the correct number of letters identified, number of words read correctly from a list). The clarity of the data kept on the charts varied, some were understandable only to the teacher using the data, and some were very clear to someone who examined the data without teacher interpretation.

At the conclusion of the interventions, the observers were asked to rate (using a six point scale, 1=low, 6=high) how well the student skill for which progress monitoring data were gathered reflected skills addressed during the intervention. The mean of these ratings across all teachers was 4.1 (above the median of the scale, indicating moderate agreement between skills monitored and skills addressed in the intervention). An expert rater (an advanced graduate student in school psychology who had previous experience analyzing intervention plans) examined the progress monitoring data to evaluate how well the monitoring systems reflected the skills mentioned in the written plans, as well as their usefulness in determining student change, and whether the goals had been met. Mean ratings

for how well the skills mentioned in the written intervention plans reflected the skills measured through progress monitoring was 3.3 (in the moderate range). How well student progress could be determined (amount of change in student skill) had a mean rating of 2.6 (below the median of the scale; indicating it was not easy to determine). Achievement of the goal had a mean rating of 1.8 (also indicating that it was not easy to determine from the available data if the student goal had been met). Because it was so difficult to determine student growth and progress toward goals, it was not possible to examine the relationship between student outcome and integrity of intervention implementation using formal procedures.

# DISCUSSION

## Intervention Implementation

The interventions examined in this study shared a number of similarities. Most interventions addressed academic concerns, were implemented by the general classroom teacher over a long period of time, and involved at least some evaluation of student progress. The typical intervention had been developed through a team process (BAT or AEA), but there was little involvement of planning team members after plan development (no active support or evaluation). In previous studies, teachers have indicated a desire for support when implementing interventions (Allinder, 1996). The teachers in this study had to develop specific steps involved in the intervention on their own, as well as evaluate effectiveness and monitor implementation integrity. It can be difficult to both implement an intervention and determine if it is being implemented with integrity.

The interventions also included written plans, but of varying specificity. The usefulness of the plans to guide the interventions may also vary as a result. While some teachers may prefer general ideas they can use as a rough guide to modify and adapt to their own needs, others may want more direction. These teachers may not have the time or skills to develop more specific steps to assist students who do not learn adequately, or make good progress using the typical curriculum and methods.

## Intervention Acceptability

Teacher responses to the Intervention Comparison Scales (ICS) indicated a high overall level of acceptance for the interventions used in this study. Teachers gave high

ratings for the interventions on both the initial and closing scales, with no significant change from the first measurement to the second, which may be expected given the fact these interventions were already being implemented. In fact, a number of the interventions had been implemented for some time prior to involvement in the research study; teachers would be more likely to abandon or modify interventions they did not find acceptable.

These interventions also tended to include components previous research has found to lead to greater acceptance of interventions. Relevant components identified in previous studies, and included in this study, were a student problem severe enough to warrant intervention, use of positive procedures that taught skills or taught the student to self-monitor for improvement, time needed to implement was not excessive (i.e., more time than the teachers believed they had to give), use of resources to which the teachers had access, and few negative side effects (Miltenberger, 1990; Reimers, et al., 1987; Witt & Elliott, 1985).

A greater range of acceptability might be obtained if assessment could have been made of the alternatives suggested during intervention development. Alternatives not selected by teachers might have had lower acceptability ratings. To help teachers and support teams develop the most feasible effective interventions, more information is needed about which factors teachers find most important in determining their acceptance of interventions during the planning process. The ICS developed as part of this study might be helpful in providing this information, but the current study does not provide information regarding its usefulness during intervention planning. The length of the scales might limit their usefulness for routine assessment in applied settings; more research is needed to determine the usefulness of this and other scales.

**Intervention Integrity**

Measurement of intervention integrity was accomplished using the Intervention Checklists (IC's). For the most part, it was not possible to develop the IC's directly from the written intervention plans. Interviewers needed to help teachers describe the steps and specify the activities teachers engaged in to assist each student. Even then, the steps were often more general than is recommended (Gresham, 1996, March) to describe the intervention in a way that makes evaluation of effectiveness possible. Most teachers indicated completing the checklists was not intrusive or time consuming. However, most teachers also did not complete the IC's as frequently as requested.

Teachers rated themselves as completing about 90% of the steps of their interventions, while observers rated intervention completion at a slightly lower rate (84%). A number of possible explanations for this discrepancy may exist, including not defining the steps correctly, observers not noticing some of the teachers' actions, and teachers overestimating their completion rate. In addition, difficulties in measuring the interventions may have influenced the findings. For example, the steps were not equal in importance, length of time necessary to implement, or ease of observing. Observers may have missed brief or unclear steps. Teachers might have overestimated the number of steps they completed in a desire to look good, or over generalized the activities they completed as fitting the steps.

Overall, both teachers and observers saw teachers as implementing most the intervention steps; however, agreement as to which steps were implemented was not as highas overall rates. For this variable, the mean rate of interrater agreement between observers and teachers was moderate at 73%. A higher rate of agreement might have been

obtained if the IC steps could have been more specifically defined. This would have resulted in a clearer guide for both teachers and independent observers to follow. However, this is not to imply the IC steps lacked applicability for use in the study. The steps were clear enough to get moderate agreement between teachers and observers, as well as relatively high levels of interobserver agreement (89%).

One research question posed for this study was how well teachers could measure intervention integrity. This data indicates that teachers appear to be able to assess integrity with some level of accuracy; however, there is still room for improvement. Clear specification of intervention steps at the beginning of the intervention, as well as support for implementation from the intervention team members may help increase teacher accuracy.

Teachers completed the vast majority of the steps defined in the IC's, indicating a relatively high rate of intervention integrity. However, the question still remains if the IC's accurately reflected the interventions as originally intended during development. No other persons involved in development of the interventions, including other members of the intervention teams, were involved in this study. Thus, it was not possible to obtain their views regarding the interventions' integrity.

Teachers in this study also had very little on-going support or assistance from the intervention team that had helped plan the intervention. Previous research has shown intervention integrity is higher when teachers receive prompting and feedback regarding their performance (Gottfredson, 1993; Noell, et al., 1997). Yet, the teachers in this study did not receive additional support or feedback to improve their performance.

While intervention integrity has been described as an important part of intervention implementation, few research studies describe how it was measured or maintained (Peterson,

et al., 1982; Gresham, et al., 1993). It would be expected if measuring integrity is not an integral part of research studies, it would not be emphasized for interventions implemented applied settings. Thus, the lack of follow-up and feedback by the intervention teams is not surprising, even if it is disappointing. However, given the need for effective and efficient interventions for the benefit of both students and teachers, this result needs to change. One way to accomplish this would be for the intervention teams to provide performance feedback and support to teachers implementing interventions.

It was hypothesized that interventions with higher levels of acceptability would be associated with higher levels of intervention integrity. This hypothesis was not supported by the data obtained. All interventions had relatively high levels of acceptability and integrity; as a result, the lack of variability made comparisons difficult to make. Other research methods may need to be used to study this relationship, such as prescribed interventions that teachers are assigned (and cannot choose those they find acceptable).

## Student Outcome

It was very difficult to determine student outcome and intervention effectiveness from the progress monitoring data. Teachers tended to use monitoring systems that were very individualized for their own purposes (often for short-term instructional planning) but did not use systems that communicated progress clearly to other persons. In addition, these progress monitoring systems often were used to measure short-term gains, instead of longer-term student improvement related to the students' intervention goals. As a result, it was difficult to determine if student's had made progress toward, or met, their goals. Most teachers indicated they believed the students had made progress, but they also thought the intervention (or

something similar) should continue the next school year, so the assumption could be made that the problems requiring intervention were not completely ameliorated. However, the degree of progress and continuing need could not be determined accurately.

If the progress monitoring data cannot be used to determine attainment of the intervention goal, then decisions most probably will be made based only on teacher opinion. Opinion can be swayed by extraneous factors such as other student behaviors that are pleasing or annoying to teachers, or temporary changes in growth (e.g., the student had a very bad day right before the teacher reported on progress, and the teacher became concerned that progress was now going to stop). While teachers are often very capable of evaluating general student growth, their evaluations are not as precise as the information obtained from specific intervention progress monitoring procedures.

Research has also indicated higher levels of student achievement can be obtained when frequent measurement of progress is used (Shinn, et al., 1989). The use of highly structured and empirically validated progress monitoring procedures could help teachers made appropriate instructional decisions to improve student achievement and communication with others (Deno, 1997). Yet, most teachers in this study did not use such procedures. Greater direction and follow-up from the intervention planning teams could have assisted the teachers in developing more useful progress monitoring systems. The guidelines described by Deno (1997) illustrate how the planning teams could have improved the progress monitoring approaches used by teachers. The teams could have ensured the procedures had instructional efficiency (include important instructional elements), growth validity (measure skills that reflect the target area), and instructional effectiveness (serve to improve instruction).

Given the lack of empirical data about student change, the effectiveness of the interventions studied cannot be determined. As a result, the relationship between integrity and student outcome cannot be established for these interventions. Thus, this study provides only limited knowledge concerning the relationship between intervention integrity and effectiveness.

## Limitations

While this study provides interesting data about interventions as they were applied in actual settings, it also has several limitations. The study includes a very small sample of teachers who were all volunteers drawn from a limited geographic area. All interventions were observed near the end of the school year which may have affected the type of interventions being implemented. These interventions may be very different from those implemented earlier in the school year, especially those that were implemented for a short amount of time (and were discontinued because the goal was met, or the student showed lack of progress). The type of problems addressed, or the level of students' needs may have been different for interventions implemented earlier in the school year. This study did not examine all possible interventions for their acceptability; it only examined acceptability of interventions that had already been selected to be implemented. Thus, intervention integrity may also have been affected positively. More research is needed to confirm and expand the results found here. Additional research could examine acceptability of interventions during the planning stage, as well as at the end of implementation. Research is also needed to determine the impact of intervention integrity on student outcome. Also, larger samples of

teachers implementing interventions in more schools are needed to examine relationships between intervention acceptability, integrity, and effectiveness.

# PART II. NATIONAL SURVEY STUDY

## INTRODUCTION

The national survey study was undertaken to further explore issues raised as part of the Local Observation Study. Specifically, the national survey was designed as an initial exploration of teachers' perceptions regarding factors that influence intervention implementation. The purpose was to determine if factors found to be important to intervention acceptability and integrity in central Iowa were also significant in other areas. The national study was conducted after the local observational study had been initiated to use feedback gathered from instrument development, as well as information gathered during the study to shape questionnaire design.

A national sample was believed to be important to get a broader perspective regarding variables that influence intervention development and implementation. Many local areas are working to improve outcomes for students, but these efforts can look very different. As mentioned previously, Iowa is working to reform special education practices, and the local Area Education Agency (AEA) has made significant changes in practices and expectations for intervention implementation. For example, teachers are expected to provide documentation of intervention efforts that include frequent progress monitoring of student change before a student will be considered for special education services. AEA support staff are expected to provide assistance to teachers in developing individualized interventions and monitoring student progress. Other AEA's in Iowa have adopted different methods to reform special education and practices with students considered to be at-risk, and other states have also varied in how they have chosen to focus on making changes in intervention implementation. The national survey was used to explore some of these differences in practices.

This study was designed to examine intervention acceptability and integrity from a broad range of teachers working in different states and geographic regions. Specifically, the following questions were addressed:

(1) What is the relationship between teacher ratings of intervention acceptability and intervention integrity?

(2) What factors influence in intervention implementation across different states?

(3) How are intervention acceptability and integrity measured and evaluated in actual practice?

To answer question one, data were collected using a questionnaire to complete correlational analyses. Descriptive analyses of interview and questionnaire data were utilized to answer questions two and three. It was hypothesized that higher levels of acceptability will be related to higher levels of intervention integrity (question 1). No hypotheses were developed for questions two and three, as these are more exploratory questions.

# METHODOLOGY

## Participants

Elementary school teachers from 11 states were selected to participate in this survey study. States were selected for the study both randomly and selectively. Iowa was selected for inclusion to serve as a comparison for the Local Observation Study, and the 10 other states were selected from a geographically representative random sample (see Data Collection section for details). Background characteristics of the respondents can be found in Table 3 where data are summarized for the total sample, Iowa, and the 10 states from the national sample. As this table shows, the overwhelming majority of respondents were female general education teachers in lower elementary grades (kindergarten through third grade). Descriptions of their classrooms are presented in Table 4.

## Measures

The Teacher Intervention Questionnaire (TIQ; Luze, 1996) developed for this study was adapted from the Teacher Intervention Interview (TII) used in the Local Observation Study (see Part I). The TIQ consisted of four parts. The first section contained background questions including questions regarding gender, age, position, grades taught, number of students, size of community, etc. The second section asked teachers general questions about their experiences working with students who need specific individualized interventions or assistance. Interventions were defined as specific activities the teacher develops and/or uses to help a student with a particular difficulty. Questions asked about specific areas in which the teacher has assisted students, any assistance teachers received to help the students,

Table 3. Respondent background information.

| | Total Sample | | Iowa Sample | | National Sample | |
|---|---|---|---|---|---|---|
| | N (350) | % | N (201) | % | N (149) | % |
| Gender | | | | | | |
| Female | 337 | 97 | 196 | 97 | 141 | 95 |
| Male | 12 | 3 | 5 | 3 | 7 | 5 |
| Age | | | | | | |
| 20-29 | 38 | 11 | 21 | 10 | 17 | 12 |
| 30-39 | 78 | 22 | 45 | 22 | 33 | 22 |
| 40-49 | 138 | 40 | 76 | 38 | 62 | 42 |
| 50-59 | 78 | 22 | 48 | 24 | 30 | 20 |
| 60+ | 17 | 5 | 11 | 6 | 6 | 4 |
| Number of Years Teaching | | | | | | |
| 1-4 | 36 | 10 | 18 | 9 | 18 | 12 |
| 5-9 | 45 | 13 | 29 | 14 | 16 | 11 |
| 10-14 | 71 | 20 | 35 | 17 | 36 | 24 |
| 15-19 | 68 | 20 | 39 | 20 | 29 | 20 |
| 20-24 | 54 | 15 | 30 | 15 | 24 | 16 |
| 25-29 | 36 | 13 | 31 | 15 | 15 | 10 |
| 30+ | 30 | 9 | 19 | 10 | 11 | 8 |
| Position | | | | | | |
| General Education | 330 | 94 | 194 | 97 | 136 | 91 |
| Special Education | 5 | 1 | 0 | 0 | 5 | 3 |
| Special program | 5 | 1 | 2 | 1 | 3 | 2 |
| General and Special Education | 6 | 2 | 5 | 3 | 1 | 1 |
| Administration | 1 | >1 | 0 | 0 | 1 | 1 |
| Other | 3 | 1 | 0 | 0 | 3 | 2 |
| Grade Teach | | | | | | |
| kindergarten | 68 | 19 | 36 | 18 | 32 | 22 |
| 1 | 72 | 21 | 39 | 19 | 33 | 22 |
| 2 | 86 | 25 | 59 | 29 | 27 | 18 |
| 3 | 74 | 21 | 43 | 21 | 31 | 21 |
| 4 & 5 | 6 | 2 | 2 | 1 | 4 | 3 |
| Multiage | 37 | 11 | 17 | 9 | 20 | 13 |
| Other | 5 | 2 | 2 | 3 | 1 | 1 |

Table 4. Descriptions of classrooms.

| | Total Sample | | Iowa Sample | | National Sample | |
|---|---|---|---|---|---|---|
| | N (350) | % | N (201) | % | N (149) | % |
| Number of Children in Classroom | | | | | | |
| 9-14 | 25 | 7 | 10 | 5 | 15 | 10 |
| 15-19 | 94 | 27 | 58 | 29 | 36 | 23 |
| 20-24 | 166 | 47 | 90 | 45 | 76 | 51 |
| 25-29 | 55 | 16 | 38 | 19 | 17 | 11 |
| 30+ | 10 | 3 | 5 | 2 | 5 | 4 |
| Number of Children in Classroom with IEP's | | | | | | |
| 0 | 83 | 24 | 52 | 26 | 31 | 21 |
| 1 | 82 | 24 | 48 | 25 | 34 | 23 |
| 2 | 52 | 15 | 31 | 15 | 21 | 14 |
| 3 | 40 | 12 | 22 | 11 | 18 | 12 |
| 4 | 43 | 13 | 22 | 11 | 21 | 14 |
| 5 or more | 46 | 13 | 23 | 12 | 22 | 15 |

including what type and who provided this assistance, and any specific requirements/expectations for intervention implementation in their local schools.

Parts three and four of the TIQ were related, asking questions about experiences providing intervention(s) for a particular student. In part three, each teacher selected a specific student with whom he/she had conducted intervention(s) during the past two years. The selected student should have had learning and/or behavioral needs that could not be met through the typical curriculum, and who was not receiving special education assistance. The teacher answered the questions regarding work with only that particular student, and did not include experiences he/she has had working with other students. The questions asked about areas addressed by the intervention, the plan used to guide the intervention, how the plan was

developed, who implemented the intervention, how student progress was monitored, and if intervention integrity had been monitored and/or maintained.

The fourth section, labeled Intervention Rating (IR), included 12 likert questions to examine intervention acceptability. The Intervention Rating scale was developed from items in the Local Observation Study's Intervention Comparison Scale (ICS). Seven of the IR scale items match items from the ICS exactly or with only minor wording changes. The other scale items were adapted from open-ended questions asked in the TII Initial and Closing interviews (for more detail, see Part I. Local Observation Study). Questions on the used a six point likert scale, very similar to that used for the ICS. At the end of the questionnaire, teachers were given an opportunity to make additional comments if they wished to do so. See Appendix D for a copy of the TIQ.

**Data Collection**

Surveys were sent to teachers in 11 states – Iowa and 10 additional states. These 10 states were randomly selected to represent five geographic regions of the country, northeast, southeast, midwest, northwest, and southwest. A randomized list of all 50 states was used to select two states from each region. When a state was selected, the state's Department of Education was contacted to obtain a random list of individual teacher names and school addresses for teachers in kindergarten through third grade. If the state's Department of Education was unable to provide a list of individual teachers, the next state from the randomized list was contacted. This process continued until two states from each region were able to provide the needed list. School district lists were not used to maintain consistency of sampling procedures. Selecting teachers from a list of school districts could have resulted in

a greater chance of under-sampling larger school districts and over-sampling smaller ones. The ten states included in the national sample were: Maine and West Virginia (northeast), Arkansas and Mississippi (southeast), Illinois and Missouri (midwest), Idaho and Wyoming (northwest), and Oklahoma and Utah (southwest).

Thirty teachers from each state were contacted and asked to complete the survey, resulting in a total of 300 surveys sent to the 10 states. It was not the intention of this study to compare data between these states, so no effort was made to obtain enough surveys to complete a state-by-state analysis. A disproportionately larger number of surveys were sent to teachers in Iowa (300 total) to compare findings with the Local Observation Study. As a result, a grand total of 600 surveys were sent to teachers in 11 states.

Each teacher was sent a letter with the survey describing the study and asking the individual teacher to respond. In addition to the letter and survey, each mailing also included a postage paid return envelope and an individual-serving tea bag. The tea bag was included to provide teachers a small token of appreciation for taking time to complete the survey. The initial mailing to teachers was completed over a two week period during mid-April. After two weeks, teachers who had not returned the survey were sent a reminder postcard. Two weeks later (four weeks after the initial mailing), each nonrespondent was sent a second letter of request, a survey, and a return envelope. A total of 358 survey responses were received, of these 350 were usable (eight were unusable because the individuals did not complete them, citing as reasons that they did not wish to be included in the study or did not believe it applied to their current work position). This resulted in an overall return rate for the surveys of 58%. In Iowa, the return rate was 68%, and the return rate for all other states combined

was 48% (no single state had a return rate lower than 33%). All returned surveys were received by mid-June, 1997.

# RESULTS

## Intervention Acceptability

Intervention acceptability was measured using the Intervention Rating (IR) scale portion of the questionnaire. Teachers answered 12 questions using a likert response format. The scale was submitted to factor analysis to investigate how well it was measuring intervention acceptability (see Appendix E for a description and results of the factor analysis). This analysis resulted in an 11 – item scale that appeared to contain several related components of acceptability. Scores from the 11 items were summed for each respondent to create a total acceptability score. These scores were then used in further analyses to examine the relationships between acceptability and other intervention factors.

The resulting ratings of intervention acceptability tended to be in the moderately to very acceptable range based on the likert scale. Scores for each item were summed to form a total acceptability score for each respondent. Total acceptability scores ranged from 21 to 66 (possible range from 11 to 66), with the mean score of 49. The mean score falls slightly above the moderately acceptable range (median on the scale was 38.5).

## Intervention Implementation

This section begins with a description of intervention implementation results for all respondents. Following the descriptive data, a statistical comparison of the findings between Iowa and the national sample is made.

Teacher responses to survey items indicated that 92% of the schools expect teachers to work on individual interventions for students having difficulty. However, a much smaller

number (n=168, 49%) indicated that there are formal guidelines for what these interventions should include. A small number of teachers (n=52, 15%) indicated that they did not know if the school had formal guidelines. Of those teachers who had formal guidelines to follow, the types of guidelines were most likely to involve a Teacher Assistance Team (TAT) process (23%). An additional five percent of respondents listed specific steps in a problem solving process, but did not mention that it occurs only within the TAT type process. The second most frequently cited formal guideline included mention of a combination of procedures (such as TAT process, paperwork and documentation of efforts). Other formal guidelines mentioned by teachers included need to document efforts, use of a problem-solving process, and special education referral procedures.

Teachers were then asked if they had worked with a student who was having difficulty (who was not receiving special education services) using an individualized intervention in the past two years. The student was to have had learning and/or behavioral needs that could not be met through the typical curriculum. The vast majority of respondents (n=304, 87%) reported having worked on such interventions during the past two years.

Teachers were asked to indicate the subject area(s) addressed by the interventions, and a number of teachers indicated working with the student in more than one subject area. The most frequently listed area was behavior problem (n=204), followed by reading (n=196), written language (n=152), math (n=146), study skills (n=89), and a number of other areas listed much less frequently (such as science n=13, spelling n=11, speech and language n=8). Types of changes made by teachers as part of the intervention included changing instructional methods (n=240), using an incentive (reinforcement) system (n=210), changing

instructional grouping (n=196), changing the physical environment (n=176), and changing instructional materials (n=167).

As teachers worked with their students on these interventions, most reported working with a specific plan that included specific steps to meet the student's needs (n=254, 84%). A smaller number of teachers actually documented the plan in writing (n=172, 57%). Most of the teachers developed the plan in conjunction with at least one additional person (parent, educational aide, other teacher, TAT, special education support personnel). Only 50 teachers (16%) indicated they developed the plan alone (27 in Iowa, and 23 teachers from the 10 state sample).

A significant proportion of teachers indicated that they gathered information about student progress/change during the intervention (n=272, 89%). The majority of classroom teachers gathered the progress monitoring data themselves, with a small number indicating they received some assistance from a teacher associate in gathering these data. Most teachers also reported making changes in the intervention as a result of student progress that was better or worse than expected (n=236, 78%).

When asked if efforts were made to ensure the intervention was implemented as originally planned (intervention integrity), a large number of teachers (n=258, 85%) indicated that such efforts had been made. Most teachers indicated that they did this alone, without help from another person. When asked how intervention integrity had been ensured (teachers could select more than one response), the most frequently cited activities were use of progress monitoring data (n=156), consultation with someone (n=79), keeping a calendar to indicate days the intervention was implemented (n=61), using a checklist of the steps

(n=59), and being observed by someone (n=25). Forty-four teachers who indicated they had worked to ensure intervention integrity kept no formal documentation.

The Chi-square test was used to examine possible differences between responses from teachers in Iowa and the national sample. Table 5 illustrates findings of these tests, with the only significant differences being found in the number of teachers who implemented individualized interventions in the past two years, written documentation of these intervention plans, and efforts made to ensure intervention implementation integrity. The

Table 5. Comparisons of teachers in Iowa and national samples on intervention guidelines, use, and documentation.

| Variables | Iowa sample N | National sample N | $\chi^2$ |
|---|---|---|---|
| School expects teachers to work on individual interventions | 184 | 136 | .00 |
| Formal guidelines exist for what interventions should include | 95 | 72 | .02 |
| Teacher has worked with a student on an individual intervention plan in the past two years | 185 | 119 | 11.27*** |
| Teacher used a plan with specific steps to work with the student | 158 | 96 | 1.10 |
| Teacher's plan was documented in writing | 114 | 58 | 4.06* |
| Information gathered about student progress/change | 162 | 110 | 1.54 |
| Efforts were made to ensure intervention integrity | 152 | 106 | 4.10* |

*$p < .05$. ***$p < .001$.

difference between the two groups was highly significant for the number of teachers who had implemented individualized interventions. Iowa teachers were more likely to report having implemented individual interventions with students having difficulty and using a written plan to guide the intervention, but teachers from the other states were more likely to report having made an effort to maintain intervention integrity.

Regression analyses were conducted to explore the relationships between intervention integrity and a number of other variables. Examination was made of several variables that might influence intervention integrity, including using a written plan to guide the intervention, monitoring child progress, and acceptability of the intervention. Acceptability of the intervention was measured using the sum of the 11 item Intervention Rating scale discussed above. Scores from this scale were regressed with responses concerning efforts had been made to maintain intervention integrity. First the relationships between using a written plan to guide intervention implementation and acceptability were examined (see Table 6). Results indicated that there was not a statistically significant relationship between having a written plan and acceptability of the intervention; however, there was a statistically significant relationship between the use of progress monitoring and acceptability of the intervention.

The second set of analyses consisted of examining variables that might influence intervention integrity. Included here were use of a written plan, use of monitoring of child progress, and acceptability of the intervention. Results of these analyses can also be found in Table 6. As can be seen from the data, statistically significant relationships existed between efforts to maintain intervention integrity and all of the variables examined -- using a written

plan to guide the intervention, measuring child progress, and acceptability of the intervention.

Table 6. Summary of regression analyses related to intervention acceptability and integrity.

| Variables | R | $R^2$ | B value | Beta | *F* |
|---|---|---|---|---|---|
| Acceptability | | | | | |
| Written Plan | .10 | .01 | -1.89 | -.10 | 2.38 |
| Progress Monitoring | .13 | .02 | -3.11 | -.13 | 5.08* |
| Integrity | | | | | |
| Acceptability | .13 | .02 | -.01 | -.13 | 4.97* |
| Written Plan | .19 | .04 | .22 | .19 | 8.64*** |
| Progress Monitoring | .96 | .93 | .97 | .96 | 4579.20*** |

*$p < .05$. ***$p < .001$.

# DISCUSSION

## Intervention Implementation

This survey gathered information from teachers serving early elementary classrooms across the country. The vast majority of these teachers reported serving a student with an individual intervention during the past two years. Few teachers had formal guidelines to follow from their schools when planning and implementing the interventions. When they did have guidelines, the guidelines usually involved a teacher assistance team process. The quality of team assistance was not measured in this study, but could be expected to vary a great deal just as the skills of individual teachers and support services personnel vary.

The students served via the interventions tended to have needs in more than one area, such as behavior and reading or science and math. The most frequently cited single area of student need was that of behavior problems, followed by reading. To meet student needs, teachers tended to make several types of changes to meet the students' needs, with the most frequently mentioned change being altering instructional methods.

Most teachers worked with at least one other person to develop the plan and included specific steps in the plan, but were less likely to document the plan in writing. In Iowa, teachers were more likely to report working with students on individual interventions and using a formal written plan to guide the intervention than teachers in other states. Possible explanations for this finding include that teachers from Iowa actually implemented more interventions (and used written plans more often), or that Iowa teachers used different definitions for interventions and written plans than teachers in other states (and as a result reported a greater number of interventions). If the first explanation is accurate, teachers from

Iowa may have reported implementing more interventions because of recent changes in special education rules and procedures (Ikeda, et al., 1996), which have increased the expectation that teachers will use individualized interventions.

In general, teachers also reported keeping progress monitoring data about the intervention, and using these data to make intervention changes. A large number of teachers reported making changes in the intervention as a result of information gathered through progress monitoring. However, these results need to be accepted with caution. Teachers in the local observation study also reported gathering progress monitoring data and using it for decision making, but the clarity and usefulness of these data for measuring long-term student growth varied greatly.

Many teachers who indicated making an effort to maintain integrity, also reported using progress monitoring data as their measure of integrity. Allinder (1996) also used progress monitoring information and found it to accurately reflect intervention integrity. This is a less expensive system than using direct observation, and might be a useful method of measuring integrity for classroom-based interventions. While the use of progress monitoring data shows promise, it should be used prudently given the caution previously discussed.

### Intervention Acceptability

The Intervention Rating scale was used to gather information about teachers' perceptions of intervention acceptability. This scale was submitted to factor analysis to examine how the items fit together. This analysis found three related components to acceptability – student related concerns, practical teacher concerns and factors surrounding of the intervention.

Most teachers gave moderately high to high ratings of acceptability for the interventions they reported implementing. This finding is logical given the fact that the teachers were describing an intervention that they had implemented in the past and would probably not have continued an intervention they did not find acceptable. Teachers would also be less likely to describe in a survey an intervention they had not found to be acceptable.

The fact that few teachers developed the intervention plan in isolation is important to keep in mind when considering acceptability of interventions. Other participants in the problem-solving and intervention planning process should assist in determining acceptability of proposed interventions, along with teachers, throughout the different intervention phases. At each stage of planning, implementation, and evaluation, acceptability should be re-assessed to look for possible changes in the teachers' perceptions. Teachers' participation in decision making can influence their willingness to implement interventions for students (Fuchs, Fuchs, & Bishop, 1992). When their opinions and input are sought during planning and selection of the intervention, teachers might view the choices more positively, or be able to have their ideas about acceptable interventions be included. Including teachers' perceptions in all stages should help improve intervention integrity and effectiveness as well.

**Intervention Integrity**

Most teachers working on interventions reported that they had no formal guidelines to follow when planning and implementing interventions with students. This can also lead to interventions of varying quality, implemented with varying levels of integrity. It is important to know an intervention is implemented with integrity to be able to attribute behavior change to the intervention rather than to other changes that may have occurred (Gresham, 1996,

March; Tilly & Flugum, 1995). If schools would provide such guidelines and the necessary training to use them correctly, teachers might be better able to maintain intervention integrity and assist students more effectively.

Most teachers in the survey reported making efforts to maintain intervention integrity, and these efforts tended to be more formal (keeping progress monitoring data, having someone observe them). Teachers from the 10 states included in the national sample reported making more effort to maintain integrity than did Iowa teachers. However, teachers from these states were also less likely to use a written plan. It is extremely difficult to maintain integrity when a plan is not written. Without a written guide, a teacher's interpretation of the intervention steps could change over time. In general, the teachers reported working alone in maintaining intervention integrity, which is hard to do well. It is difficult to maintain an objective perspective, as well as be able to notice if all steps have been implemented when trying to manage the intervention and any other classroom demands.

## Limitations

While this study gives interesting initial information about intervention implementation in a variety of classrooms, it does have several limitations that should be noted. One significant limitation of this study is that the data are only self-report from teachers who completed and returned the survey. While a majority of the surveys were returned, teachers who returned them might differ from those who chose not to return the survey. In addition, teachers may have worked in schools not representative of what most schools and teachers are doing to assist students having difficulty. Teachers may have interpreted questions about what constitutes an intervention, as well as progress monitoring

and intervention integrity differently from intended. They may have also provided responses that they believe to be socially desirable rather than reflecting actual practice, or not remembered the interventions accurately when considering the questions (some of the interventions may have been implemented up to two years ago). In spite of these limitations, this survey provides a starting point to learn what is going on in schools for teachers who are working on interventions plans with students in need.

# GENERAL CONCLUSION

## Comparing the Studies

Despite using different methods and participants, these two studies both examined issues related to intervention acceptability, integrity, and effectiveness for intervention plans implemented by teachers in school settings. Findings from the two studies were similar in some aspects, but very different in others. Most of the interventions in the local observation study addressed academic concerns, while teachers in the national survey more frequently described working on behavior problems.

When planning interventions, teachers in both studies reported they had assistance from at least one other person. Assistance providers included educational assistants, other teachers, administrators, and parents. In the local observation study, a teacher assistance or child study team usually provided planning assistance. The assistance tended to end after the intervention had been planned; teachers in both studies reported implementing the interventions on their own. They also did not receive assistance in gathering and evaluating progress monitoring data or in maintaining intervention integrity.

Two studies illustrated differences in the resulting intervention plans. Teachers in the observation study used written plans, but the steps documented in the plans were general and needed to be further specified to be measured in the current research study. Survey respondents reported using interventions plans with specific steps, but often without a written plan. However, teachers from Iowa were more likely to report using written plans than teachers from other states. This raises questions regarding the specificity of the steps used by

teachers responding to the survey. What may appear to be specific to them may be very vague to an outsider who would observe the teacher working with the target student.

There was a great deal of overlap in questions used to address intervention acceptability between the two studies. In general, teachers responded that the interventions had high levels of acceptability on factors previous research had indicated influenced acceptability. These factors include severity of the child's need, time needed to implement, number of people needed to implement, and effectiveness for the child's need (Elliott, 1988a; Lennox & Miltenberger, 1990).

Teachers in both studies reported using monitoring systems to gather information about student progress. However, teachers in the local study gathered data that differed widely in clarity and usefulness in communicating with others interested in the intervention (e.g., assistance team members and parents). Teachers in the survey were not asked specific questions about the progress monitoring system used, but wide variations in clarity would also be expected.

The purpose of progress monitoring is to measure student growth and evaluate the effects of interventions (Shinn, 1995). Systematic monitoring of student progress is also associated with greater gains in achievement (Shinn, et al., 1989). If good decisions are to be based on available data, then good data need to be gathered. Often teachers have not received training to develop and use progress monitoring systems for individualized interventions. To expect them to develop quality systems on their own is not realistic. Teachers need assistance and training to develop monitoring systems that are socially valid and useful for measuring student growth. This requires ongoing involvement and support from other intervention team members (e.g., trained administrators, teacher assistance team members, or special education

support staff – school psychologists, consulting teachers, etc.). Good quality progress monitoring may also help address the issue of intervention integrity, as Allinder's (1996) study illustrated.

Efforts to maintain intervention integrity differed between the two studies also. Teachers in the observation study indicated using only informal efforts to maintain integrity. Most of the teachers in the survey study reported making efforts to maintain integrity of the intervention, and usually using formal methods to accomplish this. In both studies, few teachers reported receiving help to maintain intervention integrity, most were left to do this on their own. Teachers working alone do not have access to methods found to be effective in increasing implementation integrity, primarily performance feedback (Noell, et al., 1997). Without direct feedback about implementation, teachers are left to guess if they are implementing the plan as the intervention team had originally conceptualized it. These data point to a need for more emphasis to be placed on monitoring and enhancing intervention integrity in school settings. If teachers could receive more direction from the person(s) who help plan the intervention, they might be better able to implement interventions and progress monitoring systems with integrity. The result could be more effective and efficient interventions.

## Implications

The effectiveness of interventions rests on the acceptability and integrity of implementation. As schools and teachers implement more interventions for students having difficulty in school they do not want to spend time and effort on ineffective interventions. However, most schools have not taken the necessary steps to ensure effective interventions

are being implemented. As results of these two studies illustrate, there are several steps that could be taken to help teachers and schools work more effectively. These steps could be considered to fall under the conceptual umbrella of support.

This support would include schools developing formal guidelines to inform teachers about what is needed to implement effective interventions. Teachers would then need to be trained about the components of these guidelines. In addition, the teachers need to have more ongoing help from their intervention planning teams. These teams need to change their procedures from assisting only with planning interventions to helping with intervention implementation and evaluation. The teams could help develop written intervention plans that include specific steps for implementation. This would help teachers know exactly what they need to do and improve communication with the team (who would then know precisely what the teacher is working on when they are providing follow-up assistance). The team could train teachers in how to develop useful progress monitoring systems, and provide feedback and support about use of the progress monitoring system as well as the specific intervention steps. These supports could include the type of consultation support and performance feedback provided in the Noell, et al. (1997) study.

In addition, teachers need to be full participants in the decision-making process (Friend & Cook, 1990). Teachers also need support to plan and implement the interventions (Carta & Greenwood, 1997), as well as feedback and support to maintain intervention integrity (Noell, et al., 1997), and to monitor student progress (Shinn, 1995). Teachers need to be able to help decide what interventions are acceptable and will fit into their classrooms, as well as suggest the types of support they will need. Some teachers will need much more

training and feedback than others, and each teacher should be able to individualize this to some extent.

All of these suggestions assume assistance team members have the necessary skills and time to provide these needed supports. Many schools currently lack one or both of these important components. The schools also need support to find additional resources, or to use their existing resources in more efficient ways.

Another implication of this project is for training teachers and support personnel. Both groups of educators need to be fully informed about the importance of implementing and maintaining interventions with integrity throughout the entire intervention. General classroom teachers need more education to understand the role of progress monitoring in implementing interventions and how to use it effectively (Deno, 1997). Support personnel need skills in developing interventions that can be implemented with integrity by general classroom teachers, as well as how to provide support and performance feedback to teachers. Training for both groups needs to occur at the preservice and inservice levels. Even though teachers and support personnel have received some training about these issues, they need more applied training (with performance feedback) to improve their skills. Preservice educators need assistance to be able to implement the needed skills from the very beginning of their career.

## Future Research

The data presented here are one limited look at interventions for students in elementary school settings. However, these data serve as a beginning to examining factors that influence intervention acceptability and integrity. The local observation study involved a

very limited number of teachers and students. Replication, with a larger sample of teachers, needs to be conducted to confirm the findings.

Research studies examining intervention acceptability would also be improved if research could begin during initial planning stages so the acceptability of each proposed intervention could be evaluated. As much of the research about intervention acceptability has used analog studies, examining acceptability of proposed interventions for real student concerns would give more validity to the data. This would also allow for research examination of other participants' involvement in the problem-solving process (administrators, assistance team members, parents, target students). These other participants could give their perspectives on the relative acceptability of proposed interventions, how to implement the steps discussed, and how to support the teachers during implementation and evaluation.

Future studies could also examine the usefulness of written plans across more schools. Potential questions that could be addressed by research include: "Do teachers using written plans develop more effective interventions?", "How do teachers develop effective plans?", and "How specific do plans need to be in order to maximize effectiveness?" More work is also needed to understand how to incorporate effective progress monitoring into intervention planning and implementation. In addition, more research is needed about the role of progress monitoring in measuring intervention integrity, as well as other cost effective methods to measure integrity.

These types of studies also need to be carried out across a wide variety of interventions and schools to determine if the findings are indicative of only one area, or are more reflective of the status of intervention implementation in general. Different states and

school districts may have policies and student populations that could radically change the type of interventions implemented, as well as results achieved. Analog studies were helpful to initiate research on this topic; now more studies conducted in actual school settings are needed. If teachers are expected to use effective intervention methods to work with students, then they need to have accurate information about the intervention planning and implementation process to do their job well.

# APPENDIX A

# INITIAL INTERVIEW AND

# CLOSING INTERVIEW

**Teacher Intervention Interview - Initial Interview**

## Background

1. Current Position (Title): _____
2. Age: _____
3. Gender: _____
4. Number of years teaching (including the current year): _____
5. Number of years in current position (including the current year): _____
6. Total number of children in class: _____
7. Number of children in class with written individualized intervention plans (**not** IEP's): _____
8. Number of children in class with IEP's (individualized education plans in special education): _____

## General Questions

1. How do you deal with children having difficulty with learning and/or behavior in school?

2. In what areas have you been the most successful helping students?
   Where have you had the most difficulty?

3. What determines your decision to ask for additional help working with students?

4. When you need extra assistance, how do you generally decide to seek outside assistance?
   What kind of assistance do you usually seek?
   From whom (principal, teachers, AEA, resources outside school, parents)?
5. What can special education support personnel (AEA or district special education administration) do differently than they do now to help teachers?

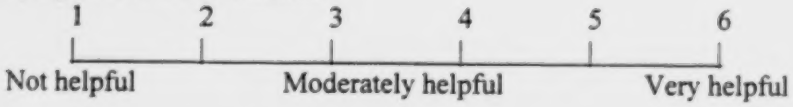
6. When people talk about interventions for students, what comes to your mind?

7. What changes, if any, would you like to see to help children with difficulties?

8. What do you think is the best way to bring about change in how teachers work?

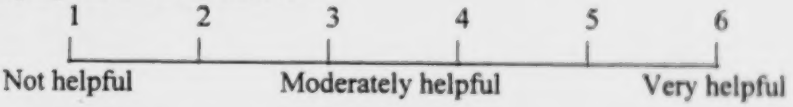
9. What do you think is the best way to bring about change in schools?

10. In your opinion, how helpful has inservice training (in the last three years) been in developing student interventions?




**(List the most helpful topics).

11. In your opinion, how helpful have college or staff development classes been for developing student interventions?




**(List the most helpful topics --specify if the classes were staff development or college)

**Teacher Intervention Interview - Initial Interview**

**Intervention Specific**

1. **Description of Concern**
   A. What academic area is the concern?
   B. What is the goal of the intervention plan?

1. **Intervention Description**
   A. What does it involve? What are the steps?
   B. Who is responsible for implementing the activities?
   C. What is the anticipated time line for the intervention to last?

**2. Intervention Planning**

A. How were you involved in the planning decision making?

B. Who else was involved?

Were parents involved?

C. Were you satisfied with your level of involvement the involvement of others?

D. How was the decision made to use this particular intervention?

E. How much choice were you given in deciding on the specific intervention activities?

Were you given the opportunity to accept reject proposed plans?

If yes, how?

F. Would you have preferred a different intervention or strategy to implement?

Why?

In what ways would that intervention be different than the one you are using?

**3. Intervention Implementation**

A. What, if any material resources are needed to implement the intervention? What type?

How do you get the resources, or the money for them?

B. How much time is needed to implement this intervention?

C. What type of skills are needed?

D. How much effort is required by you to implement the intervention? By others?

4. **Intervention Integrity**
   Do you make sure the intervention is implemented as originally planned?
   How do you do this?
   Does anyone help with the effort?

5. **Intervention Monitoring**
   A. How is student progress monitored?
   B. How often is the intervention reviewed for effectiveness?
      Does anyone help with the effort?

6. **Implementation Support**
   A. Does anyone help you implement the intervention?
   B. Have any changes been made to your work load so you can implement the intervention?
   C. Does your administration support the intervention?
      If yes, how?
      If no, how do you know?

7. **Intervention Experience**
   A. Have you had experience with problems like this before?
      If yes, how much experience?
   B. What has been most helpful to you with problems like this (the current and/or previous problems)?
   C. What has been the least helpful to you with problems like this (the current and/or previous problems)?

**Teacher Intervention Interview (TII) -- Closing Interview**

## Background

1. Current Position (Title): _____

2. Number of students in classroom/program: _____

## Intervention Specific

**1. Intervention Description**

A. What did the intervention involve?
B. Who was responsible for implementing the activities? (List each person).
C. When did the intervention begin, and how long did it last?

**2. Intervention Implementation**

A. Were any changes made to the intervention during implementation?
   If yes, what were they?
   Who decided the changes were needed?
   How involved were you in making this decision?
B. What needed material resources different from those described in the initial interview?
C. How much time was needed to implement the intervention?
   Was this different from those described in the initial interview?
D. What type of skills were needed?
   Were these different from those described in the initial interview?
E. How much effort was required by you to implement the intervention? By others?
   Were these different from those described in the initial interview?

**3. Intervention Integrity**

A. Did you implement the intervention as described in the written plan?

If yes, How did you make sure you implemented the intervention as written?
If no, what changes did you make and why?

B. Did anyone help with the effort?

**4. Intervention Monitoring**

A. How was the intervention monitored?

B. How often did you review the progress monitoring data to evaluate student progress?

C. Did you use progress monitoring data to change the intervention?
Did anyone else review the progress monitoring data (instead of the you, or in addition to you)?

**5. Intervention Support**

A. Did anyone help you implement the intervention?

B. Were changes made to your work load so you could implement the intervention?

**6. Intervention Outcome**

Was the intervention successful? Will it be continued? Will it be changed?
What factors influenced the outcome?

**7. Study participation**

Do you think participating in the research study changed how you implemented the intervention? If so, how?

Did completing the intervention checklists change how you implemented the intervention?

Would you be willing to fill out the checklists even if you were not participating in a research study?

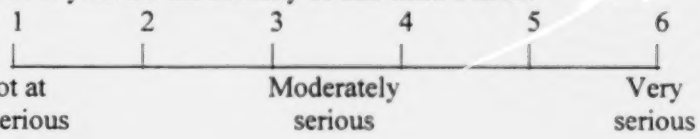
Were the checklists helpful or a hindrance when working on the intervention?

# APPENDIX B

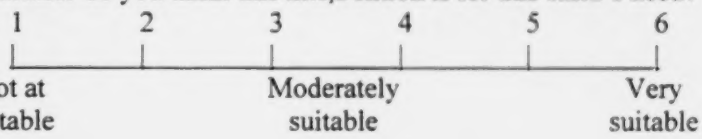
## INITIAL INTERVENTION COMPARISON SCALE (IICS) AND CLOSING INTERVENTION COMPARISON SCALE (CICS)

## Intervention Comparison Scale

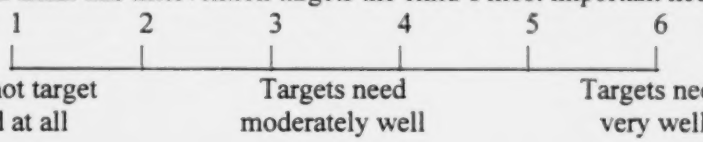
1. How would you rate the severity of this child's need?



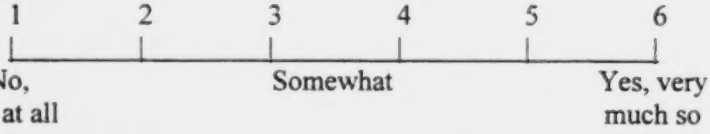

2. How suitable do you think this intervention is for this child's need?



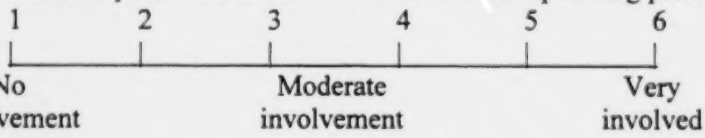

3. Do you think this intervention targets the child's most important need?



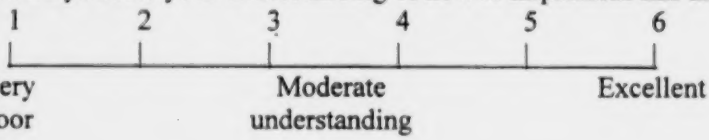

4. During intervention planning, was your input sought about possible intervention activities?



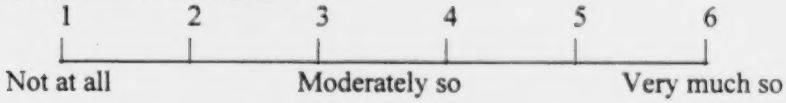

5. How would rate your involvement in the intervention planning process?



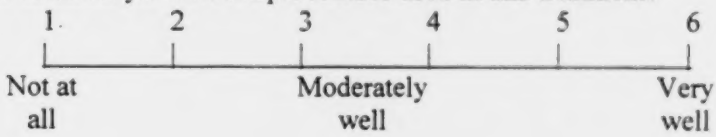

6. How would you rate your understanding of how to implement this intervention?



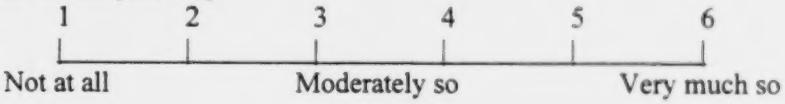
7. During intervention planning, were you given the opportunity to choose from proposed intervention plans?



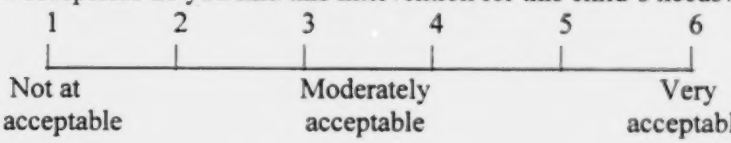

8. How much do you like the procedures used in this treatment?



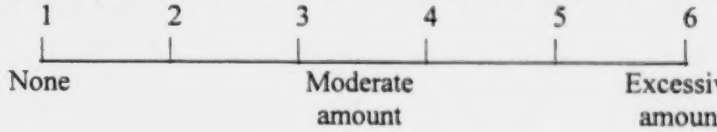

9. How would your rate the extent to which your ideas were accepted and used during intervention planning?



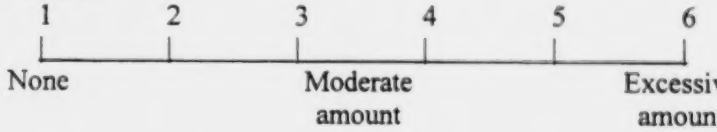

10. How acceptable do you find this intervention for this child's needs?




11. How would you rate the amount of time this intervention will involve?



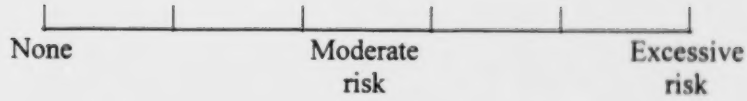

12. How would you rate the amount of materials and resources needed for the intervention?



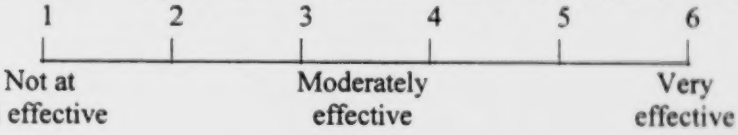

Initial Interview 3

13. To what extent are undesirable side effects likely to result from this intervention?

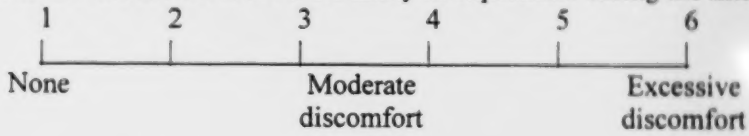
1 2 3 4 5 6



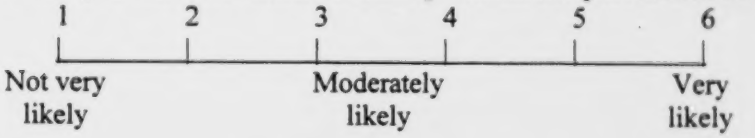

14. How effective do you think this treatment will be for this child's need?



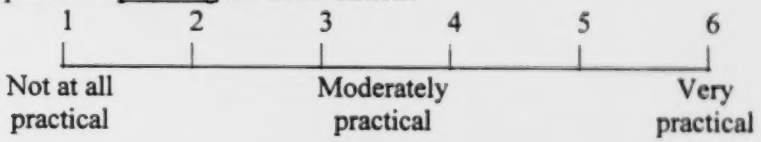

15. How much discomfort is the child likely to experience during the intervention?



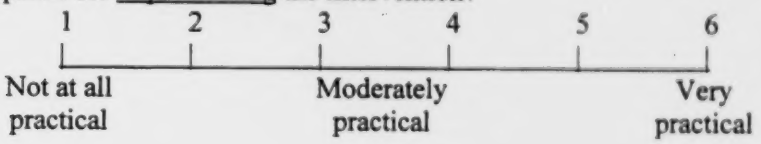

16. How likely is this intervention to make permanent improvements in the child?




17. How would you rate the practicality of this intervention given the amount of time required for planning the intervention?




18. How would you rate the practicality of this intervention given the amount of time required for implementing the intervention?

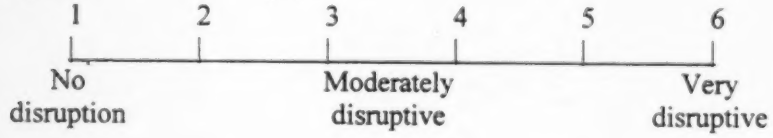




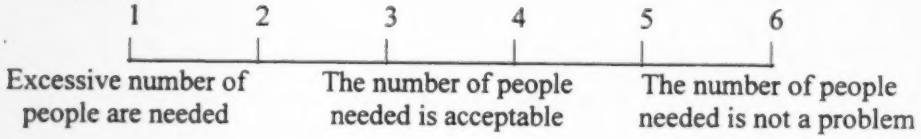

19. How would you rate the practicality of this intervention given the amount of time required for record keeping?

| Not at all practical | Moderately practical | Very practical |
|---|---|---|

20. How would you rate the amount of disruption this intervention will create for other students?

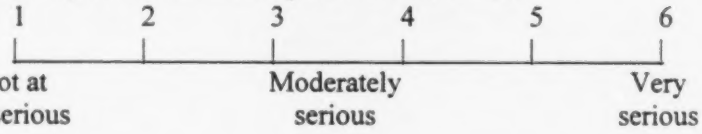



21. How would you rate the intervention in terms of the number of people needed to implement it?

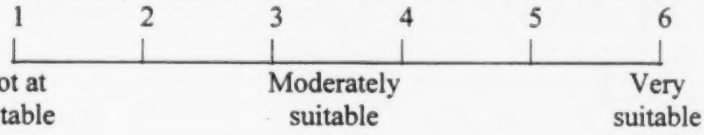


**Intervention Comparison Scale**

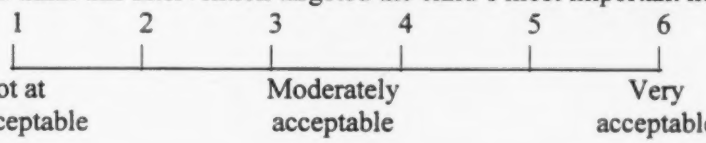
1. How would you rate the severity of this child's need?



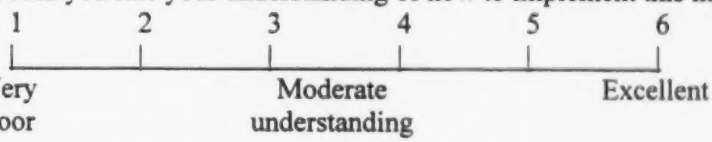

2. How suitable do you think this intervention was for this child's need?



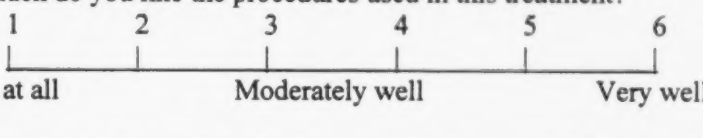

3. Do you think this intervention targeted the child's most important need?



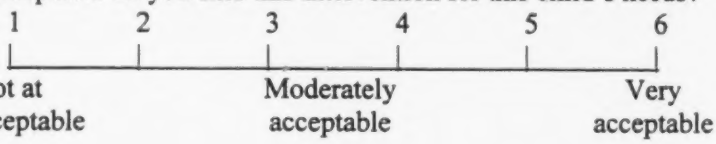

4. How would you rate your understanding of how to implement this intervention?



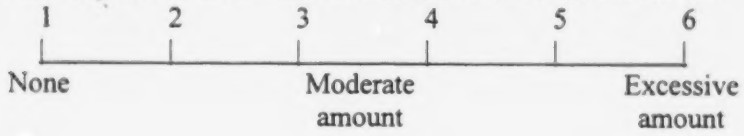

5. How much do you like the procedures used in this treatment?



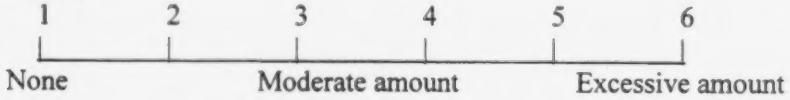

6. How acceptable do you find this intervention for this child's needs?



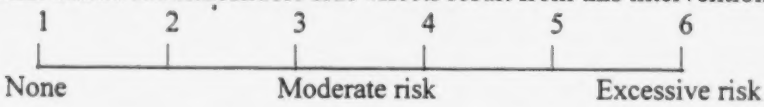
7. How would you rate the amount of time this intervention involved?



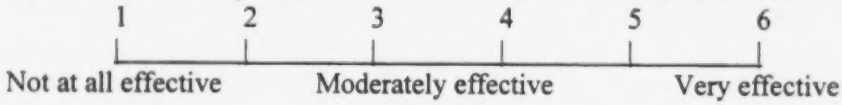

8. How would you rate the amount of materials and resources needed for the intervention?



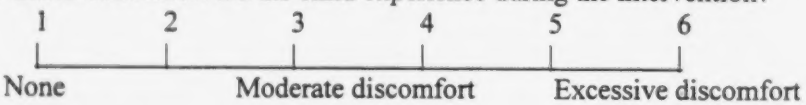

9. To what extent did undesirable side effects result from this intervention?



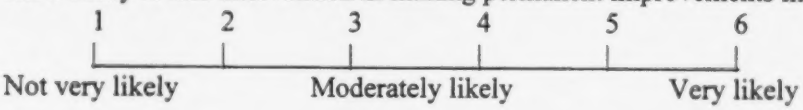

10. How effective do you think this treatment was for this child's need?



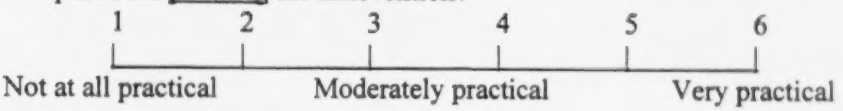

11. How much discomfort did the child experience during the intervention?




12. How likely is this intervention in making permanent improvements in the child?

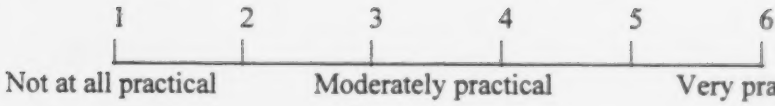



13. How would you rate the practicality of this intervention given the amount of time required for planning the intervention?

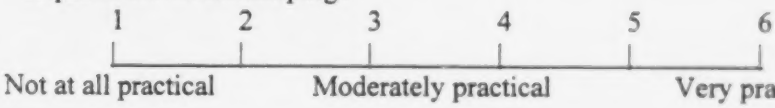



Closing Interview 3

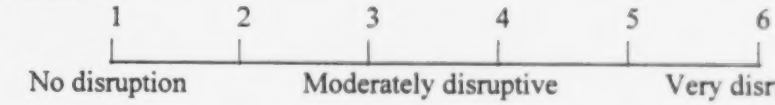
14. How would you rate the practicality of this intervention given the amount of time required for implementing the intervention?



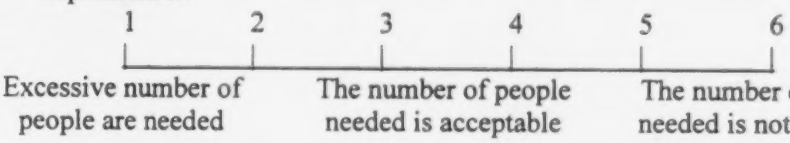

15. How would you rate the practicality of this intervention given the amount of time required for record keeping?




16. How would you rate the amount of disruption this intervention will create for other students?




17. How would you rate the intervention in terms of the number of people needed to implement it?


1 2 3 4 5 6
Excessive number of people are needed
The number of people needed is acceptable
The number of people needed is not a problem

# APPENDIX C

## INTERVENTION OBSERVATION FORM (IOF)

**Classroom Observation**

**Behavior/Activity to be Observed ***

**Intervention Setting**

1. Date of observation: _____
2. Time of observation: _____
3. Number of students in room: _____
4. Number of adults in room: _____
5. Adult who conducts the intervention:
   - _____ Classroom Teacher
   - _____ Other Teacher (Specify: _____)
   - _____ Regular Classroom Associate
   - _____ Special Associate
   - _____ Other (Specify: _____)
6. Length of intervention: (in minutes) _____
7. Intervention grouping:
   - _____ Whole Group (special assistance given during regular whole class instruction)
   - _____ Small Group (special assistance during regular small group instruction)
   - _____ Separate Small Group (group set up only for specialized assistance)
   - _____ Individual (adult works one-on-one with the child)

   While the target student receives special assistance, other students are:
   - _____ Working in a Whole Group
   - _____ Working in Small Groups
   - _____ Working in Small Groups or Individually
   - _____ Working Independently
   - Not in Room

| | | | | |
|---|---|---|---|---|
| **Classroom Environment** | | | | |
| 1. Classroom rules and procedures are clear. | N | S | F | UC |
| 2. There are interruptions in the flow of classroom activities. | N | S | F | UC |
| 3. Classroom is pleasant. | N | S | F | UC |
| 4. Classroom is productive. | N | S | F | UC |
| 5. Make transitions smoothly. | N | S | F | UC |
| **Teacher Behaviors** | | | | |
| 1. Teacher clearly explains what students are to do. | N | S | F | UC |
| 2. A variety of teaching methods and materials are used. | N | S | F | UC |
| 3. Teacher uses praise. | N | S | F | UC |
| 4. Teacher uses punishment. | N | S | F | UC |
| 5. Teacher waits for students to respond. | N | S | F | UC |
| 6. Teacher provides instructional feedback about student responses. | N | S | F | UC |
| 7. Teacher monitors students. | N | S | F | UC |
| **Target Student Participation** | | | | |
| 1. Attends to teacher. | N | S | F | UC |
| 2. Follows teacher directions. | N | S | F | UC |
| 3. Actively engaged in learning. | N | S | F | UC |
| 4. Answers questions when asked. | N | S | F | UC |

*Key for Observation: N = Not occur S = Occurs Sometimes F = Occurs Frequently UC = Unclear



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# APPENDIX D

# NATIONAL QUESTIONNAIRE

## Teacher Questionnaire

### Background

**Please answer the following questions as completely as you can. When given a choice of responses, circle the number corresponding to your choice.**

1. Current position (Title):
   1 = General education classroom teacher
   2 = Special education teacher
   3 = Special teacher (art, music, P.E., media, etc.)
   4 = Itinerant teacher
   5 = Other (specify: _____)

2. Your age:
   1 = 20-29
   2 = 30-39
   3 = 40-49
   4 = 50-59
   5 = 60 +

3. Gender:
   1 = Male
   2 = Female

4. Grade(s) you currently teach: _____

5. Number of years teaching (including the current year): _____

6. Number of years teaching current grade (including the current year): _____

7. Total number of children in your current class: _____

8. Number of children with IEP's in your class (individualized education plans in special education, even if special education services received elsewhere): _____

9. Total number of students in building: _____

10. Population size of community served by school district:
    1 = 0 - 9,999
    2 = 10,000 - 49,999
    3 = 50,000 - 99,999
    4 = 100,000 or more

### Classroom Interventions

**The following questions address interventions you have used to assist students who find school difficult. Interventions refer to specific activities you, as the teacher, develop and use to help the student with the particular difficulty he/she is having.**

11. Please rate your experience in helping students having difficulties in the following areas. Use a scale of 1 to 3, where 1 means no experience and 3 means a great deal of experience. Use this same scale to rate your success in helping the students with the area of difficulty.

| Area of Intervention | Experience | | | Success | | |
|---|---|---|---|---|---|---|
| | None | Some | Great deal | None | Some | Great deal |
| Math | 1 | 2 | 3 | 1 | 2 | 3 |
| Reading | 1 | 2 | 3 | 1 | 2 | 3 |
| Written Language | 1 | 2 | 3 | 1 | 2 | 3 |
| Other specific subject area. Specify: | 1 | 2 | 3 | 1 | 2 | 3 |
| Study Skills | 1 | 2 | 3 | 1 | 2 | 3 |
| Behavior Problems | 1 | 2 | 3 | 1 | 2 | 3 |
| Other. Specify: | 1 | 2 | 3 | 1 | 2 | 3 |

12a. When working with students who have difficulty, how often do you obtain assistance from others to help you serve the students?

1 = Never
2 = Seldom
3 = Sometimes
4 = Often
5 = Always

12b. If you do obtain assistance, what type do you receive? On a scale of 0 to 3, please rate the helpfulness of each type of assistance you receive, where 0 means no assistance is received, 1 means the assistance is not at all helpful, and 3 means it is very helpful.

| Type of Assistance | Assistance | | | |
|---|---|---|---|---|
| | None | Not helpful | Fairly helpful | Very helpful |
| Consultation with education specialists (e.g., special education teacher, school psychologist, etc.). | 0 | 1 | 2 | 3 |
| Informal suggestions from other teachers. | 0 | 1 | 2 | 3 |
| Extra personnel (e.g., more teacher associate time). | 0 | 1 | 2 | 3 |
| Reduction in other duties. | 0 | 1 | 2 | 3 |
| Materials (e.g., new/different books). | 0 | 1 | 2 | 3 |
| Other. Specify: | 0 | 1 | 2 | 3 |

12c. If you do obtain assistance, from whom do you receive the assistance? Rate the helpfulness of each person who provides assistance, where 0 means no assistance is provided by the person, 1 means the assistance is not helpful, and 3 means it is very helpful.

| Assistance Provider | Assistance | | | |
|---|---|---|---|---|
| | None | Not helpful | Fairly helpful | Very helpful |
| Other General Education Teachers | 0 | 1 | 2 | 3 |
| Principal | 0 | 1 | 2 | 3 |
| Special Education Teacher | 0 | 1 | 2 | 3 |
| Guidance Counselor | 0 | 1 | 2 | 3 |
| School Psychologist | 0 | 1 | 2 | 3 |
| School Social Worker | 0 | 1 | 2 | 3 |
| Speech and Language Pathologist | 0 | 1 | 2 | 3 |
| Other Special Education Support Personnel. Specify: | 0 | 1 | 2 | 3 |
| Professionals outside the school. Specify: | 0 | 1 | 2 | 3 |
| Other. Specify: | 0 | 1 | 2 | 3 |

13. Does your school expect teachers to work on individual interventions for students having difficulty?
    1 = Yes
    2 = No
    3 = Don't Know

14. Does your school have formal guidelines about what the interventions should include?
    1 = Yes ——— What do these guidelines include?
    2 = No _____
    3 = Don't Know _____
    _____

**Specific Interventions**

**To answer the questions in this section, think of the student you have worked with most recently (in the past <u>two</u> years) who has had difficulty in your classroom. The student you select should have had learning and/or behavioral needs that could not be met through the typical curriculum, and who is not receiving special education assistance. The questions ask about intervention(s) that you have used to assist the student in your classroom.**

15. In the past <u>two</u> years, have you worked on a intervention with a student having difficulty (who was not receiving special education services) in your classroom?
    1 = Yes ——— Pick the **most recent** intervention and answer the following questions.
    2 = No ——— Please go to the comment section on the last page.

16. What subject areas did the intervention address? (Circle all that apply).
    1 = Math
    2 = Reading
    3 = Written Language
    4 = Other specific subject area (list: _____)
    5 = Study skills


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6 = Behavior problems
7 = Other (specify: _____)

17. Did the intervention require that you change any of the following? (Circle all that apply).
1 = Instructional materials
2 = Instructional groupings
3 = Instructional methods/approaches
4 = Physical environment
5 = Incentive (reinforcement) system
6 = Other (specify: _____)

18. Was a specific plan (that included specified steps to follow when assisting the student) developed to meet the student's needs?
1 = Yes ——— Was the plan documented in writing?
1 = Yes
2 = No

2 = No ——— What did you use to guide the intervention?

19. How was the intervention developed?
1 = I developed the plan alone
2 = I developed the plan with the child's parents
3 = I developed the plan with informal consultation from another teacher/s
4 = I developed the plan with formal consultation from another teacher/s
5 = I developed the plan with special education support personnel (e.g., school psychologist, special education consultant, speech and language pathologist, etc.)
6 = Other (specify: _____)

20. Who implemented the intervention? (Circle any that apply).
1 = I did alone
2 = Teacher associate/aide only
3 = Other classroom teacher only
4 = Special teacher only (specify: _____)
5 = Other special education support personnel only (e.g., school psychologist, special education consultant, speech and language pathologist, etc.)
6 = Other (specify: _____)

21. How many days did you work with the student on this intervention?
1 = 1-5 days
2 = 6-15 days
3 = 16-30 days
4 = 31-60 days
5 = more than 60 days

22. How many minutes per day did you work on this intervention (include time spent directly with the student, as well as planning time)?
1 = 0-5 minutes per day
2 = 6-15 minutes per day
3 = 16-30 minutes per day
4 = 31-60 minutes per day
5 = more than 60 minutes per day

23a. Was information gathered about student progress/change during the intervention?
1 = Yes
2 = No
3 = Don't Know

23b. If **Yes**, who gathered the information? (Circle all that apply).
1 = I did alone
2 = Teacher associate/aide
3 = Other classroom teacher
4 = Special teacher (specify: _____)
5 = Other special education support personnel (e.g., school psychologist, special education consultant, speech and language pathologist, etc.)
6 = Other (specify: _____)

23c. Did you make changes in the intervention as a result of student progress (because the student's progress was better or worse than expected)?
1 = Yes 2 = No

24a. Were efforts made to ensure the intervention was implemented as originally planned (intervention integrity)?
1 = Yes
2 = No
3 = Don't Know

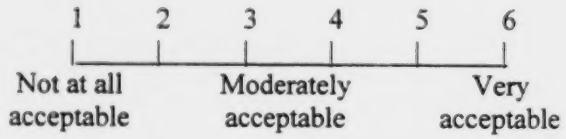
24b. If **Yes**, who ensured this?
1 = I did alone
2 = Teacher associate/aide
3 = Other classroom teacher
4 = Special teacher (specify: _____)
5 = Other special education support personnel (e.g., school psychologist, special education consultant, speech and language pathologist, etc.)
6 = Other (specify: _____)

24c. If you answered **Yes** to 24a, what did you do to ensure integrity of the intervention during implementation?
1 = Someone observed me
2 = Someone consulted with me
3 = Used a checklist of the steps
4 = Kept a calendar to indicate days the intervention was implemented
5 = Kept progress monitoring data
6 = No formal documentation
7 = Other (specify: _____)

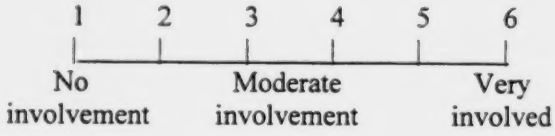
**Intervention Rating**

**Please answer the following questions about the specific intervention procedure you selected in the previous section. For each item, circle the appropriate number.**

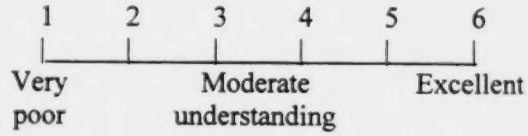
1. How acceptable did you find this intervention for this child's needs?



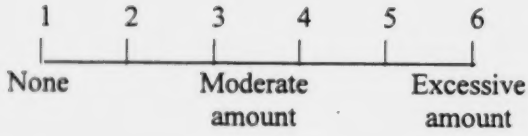

2. How would you rate your involvement in the intervention planning process?



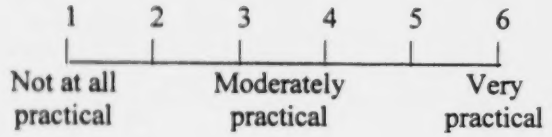

3. How would you rate your understanding of how to implement this intervention?



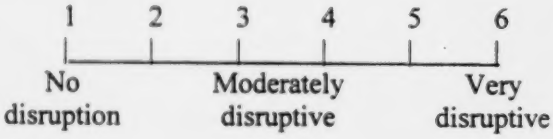

4. How would you rate the amount of materials and resources needed for the intervention?



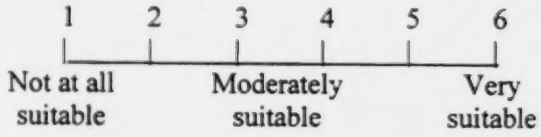

5. How would you rate the practicality of this intervention, given the amount of time required for implementation?



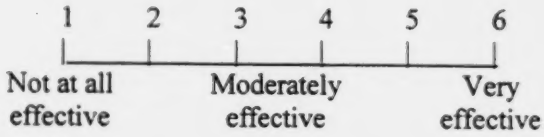

6. How would you rate the amount of disruption this intervention created for other students?



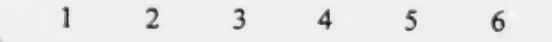

7. How acceptable was this intervention for your classroom/teaching style?



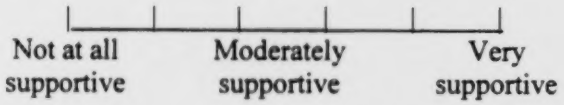

8. How effective do you think this intervention was for this child's needs?



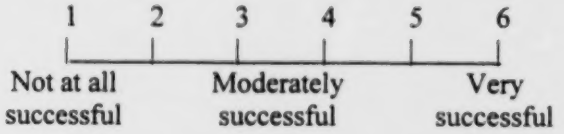

9. How would you rate your



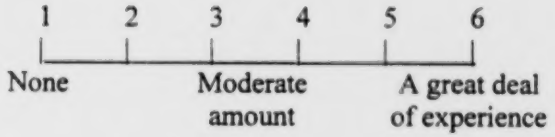
administration's support of the intervention?



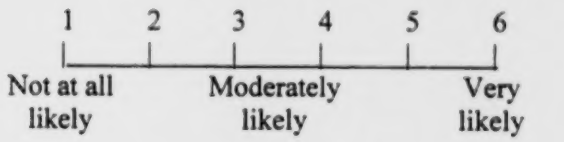

10. How would you rate the success of the intervention (i.e., meet the child's needs so he/she could be successful in the classroom)?




11. How much previous experience have you had with problems like this?




12. How likely are you to use this type of intervention again?




**In closing, please provide any other comments about what you found to be helpful or not helpful when planning and implementing interventions for students. You may also comment on any system-wide changes that address the above areas that you would like to see made.**

**Please use the enclosed envelope to return the survey. Thank you for your assistance.**

# APPENDIX E

# FACTOR ANALYSIS

## FACTOR ANALYSIS

The 12 items from the Intervention Rating (IR) scale in the fourth section of the TIQ were submitted to a factor analysis to determine how well the items were measuring the concept of intervention acceptability. Cases were included in the analysis if the respondent answered at least 75% of the 9 of 12 scale items, resulting in a sample of 295 (only respondents who indicated they implemented an individual intervention in the last two years answered these items). Thirteen of these respondents did not answer all the IR questions, eight respondents answered 11 items, three answered 9, one answered 6 items, and one respondent did not answer any items. For respondents who answered nine or more items (11 respondents), each individual's average rating for the other scale items was substituted for the missing items. The two respondents who left out significant portions of the scale were not included in the factor analysis.

As a first step in the factor analysis, the reliability of the scale was examined. Internal reliability was measured using Cronbach's alpha (.83). However, examination of the item-total statistics indicated that one question (Question 4. "How would you rate the amount of materials and resources needed for the intervention?") had a very low corrected item-total correlation (.12), and if the item were to be deleted the scale alpha would increase. Examination of the question showed the problem appeared to be in the response format. The response for this question did not have a linear increase from less to more positive as did the other questions (likert response format was 1=None, 3 to 4=Moderate amount, and 6=Excessive amount). An intervention that required a moderate amount of resources may not be viewed less positively than one that required no materials or resources to implement. As a result, this item was deleted from further analyses. Cronbach's alpha for the new 11 item

scale was .85. Table 7 lists the correlations between the remaining 11 items in the Intervention Rating scale. See Appendix D (National Questionnaire) for a copy of the questionnaire to compare items.

The next step in the factor analysis was to extract factors from the items. Several methods were explored for use, with the principal components analysis being selected as the best fit. Principal components analysis attempts to arrive at a small number of components that explains the largest amount of variance (Pedhazur & Schmelkin, 1991). Bartlett's Test of Sphericity was conducted to determine if the correlations in the matrix were significantly different from zero (the matrix is not an identity matrix), with the result = 1465.81, p=<.001. This confirmed that the correlation matrix is not an identity matrix, and factor analysis could continue.

The number of components to be included in the model was based on the criteria of eigenvalues greater than one. Both orthogonal and oblique rotation solutions were completed. The oblique method Direct Oblimin (Delta set at 0; SPSS, Inc., 1997) was completed first to determine if the factors were correlated with one another. This resulted in a three component model. An examination of the intercorrelations between the components showed that none reached .4, which was the level set as necessary to use the oblique solution (Pedhazur & Schmelkin, 1991).

An orthogonal solution was then chosen as the final method for analysis. The Varimax orthogonal rotation method that simplifies interpretation of the factors was selected for this analysis (SPSS, Inc., 1997). This solution also resulted in three components that more clearly explained the components than the oblique solution (a criteria of a correlation of .4 and above for inclusion on a component). Examination of the scree plot also indicates

Table 7. Survey Intervention Rating scale item correlations.

| Scale Item | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. Acceptable | 1.00000 | | | | | |
| 2. Involved in planning | .33122 | 1.00000 | | | | |
| 3. Understand how to implement | .37897 | .56185 | 1.00000 | | | |
| 5. Practicality given time required | .57206 | .26752 | .35893 | 1.00000 | | |
| 6. Disruption for other students | .26663 | -.06461 | .15880 | .32523 | 1.00000 | |
| 7. Fit classroom/teaching style | .53708 | .32796 | .42936 | .61699 | .46621 | 1.00000 |
| 8. Effective for this child's needs | .76371 | .29574 | .32662 | .53958 | .25022 | .52666 |
| 9. Administrative support | .28371 | .12220 | .27334 | .30174 | .21540 | .35984 |
| 10. Success of the intervention | .72555 | .25916 | .25663 | .48781 | .19657 | .47884 |
| 11. Previous experience | .11169 | .19444 | .28329 | .08576 | .04156 | .13486 |
| 12. Likely to use again | .59474 | .45176 | .48722 | .52750 | .23734 | .53441 |

| Scale Item | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|
| 1. Acceptable | | | | | |
| 2. Involved in planning | | | | | |
| 3. Understand how to implement | | | | | |
| 5. Practicality given time required | | | | | |
| 6. Disruption for other students | | | | | |
| 7. Fit classroom/teaching style | | | | | |
| 8. Effective for this child's needs | 1.00000 | | | | |
| 9. Administrative support | .27392 | 1.00000 | | | |
| 10. Success of the intervention | .79650 | .27427 | 1.00000 | | |
| 11. Previous experience | .19203 | .05639 | .23591 | 1.00000 | |
| 12. Likely to use again | .60286 | .37547 | .55970 | .35430 | 1.00000 |

existence of three factors (see Figure 4). The factor matrix can be found in Table 8. The components were Student Related Concerns, Practical Teacher Concerns, and Surrounding Factors.

**Student Related Concerns**

This component included six items and explained most of the variance of the model – 44 %. Included were items directly related to the student targeted by the intervention (i.e., Acceptable for the child's needs, Effective for this child's needs, Success of the intervention), as well as several concerns that influence teacher availability to work with the student (i.e., Practicality given amount of time required for implementation, Fits classroom/teaching style, and Likely to use this intervention again).

**Practical Teacher Concerns**

This component included four items and explained 12% of the model variance. Items related to teacher concerns related to implementing an individualized intervention in the context of the other demands of teaching (Practicality given amount of time required for implementation, Amount of disruption for others, Fits classroom/teaching style, and Administration's support) load on this component. Two of these items also loaded on the first component.

**Surrounding Factors**

This component included four items that accounted for 10% of model variance. The component label refers to items that surround implementation of the intervention

(Involvement in planning process, Understanding of how to implement the intervention, Previous experience with similar problems, and Likely to use this intervention again). One item also loaded on the first component.

While three components were extracted from this analysis, the three are closely related and several items load on more than one factor, indicating that the scale might be considered to reflect an overall measure of teacher acceptability. As a result, the 11 items were summed for each person to create a total acceptability score used in further data analyses.

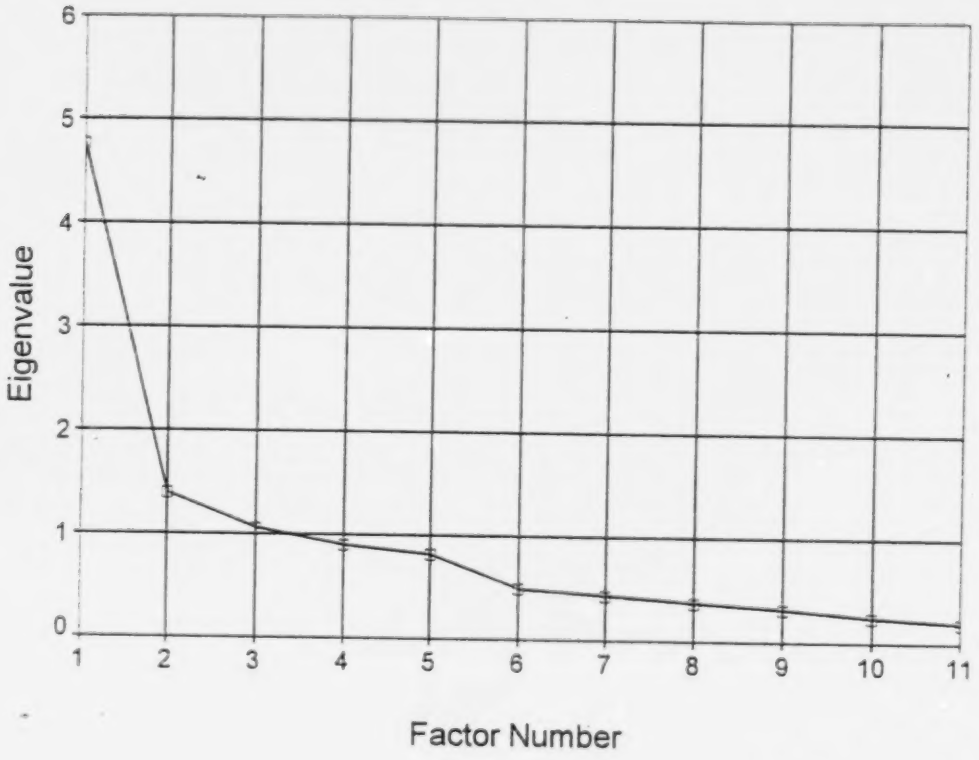



Figure 4. Factor analysis scree plot.

Table 8. Varimax factor matrix.

| Scale Item | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| 1. How acceptable did you find this intervention for this child's needs? | **.83** | .26 | .19 |
| 2. How would you rate you involvement in the intervention planning process? | .17 | .04 | **.80** |
| 3. How would you rate your understanding of how to implement this intervention? | .10 | .37 | **.77** |
| 5[a]. How would you rate the practicality of this intervention, given the amount of time required for implementation? | **.54** | **.52** | .17 |
| 6. How would you rate the amount of disruption this intervention created for other students? | .12 | **.79** | -.18 |
| 7. How acceptable was this intervention for your classroom/teaching style? | **.43** | **.68** | .25 |
| 8. How effective do you think this intervention was for this child's needs? | **.89** | .19 | .17 |
| 9. How would you rate your administration's support of the intervention? | .13 | **.60** | .16 |
| 10. How would you rate the success of the intervention (i.e., meet the child's needs so he/she could be successful in the classroom)? | **.90** | .11 | .14 |
| 11. How much previous experience have you had with problems like this? | .14 | -.09 | **.56** |
| 12. How likely are you to use this type of intervention again? | **.55** | .33 | **.52** |

[a] Item 4. was not included in the analysis.

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